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ABSTRACT

This volume presents information on research practices used to stimulate discussion during the Second European Colloquium of Directors of Educational Research Organizations, November 7-9, 1973 in Paris, France. Most of the information is presented in the form of case studies that deal with the following questions: a) How were the problems defined and by whom? b) Who were the researchers, financiers, and evaluators? c) What were the results? d) How were research conclusions transmitted to schools? e) How did the importance of these findings compare with political, social, and economic factors? and f) Have the practical results of reforms confirmed the promises of research findings? Other information designed to stimulate discussion by the participants is presented as Simulation Papers. They contain imaginary issues and problems of an imaginary contry. A list of issues for the researcher raises questions applicable to current problems of the countries represented at the council meeting. (BRB)

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SECOND COLLOQUIUM OF DIRECTORS OF EDUCATIONAL RESEARCH ORGANISATIONS

Paris, 7-9 November 1973

WORKING PAPERS

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INTRODUCTION

The main question which the participants in this Second European Colloquium of Directors of Educational Research Organisations, to be held on 7 to 9 November 1973 in Paris, will be trying to answer is 'how can the impact of educational research both on the formulation of educational policy and in terms of what goes on in the classroom be improved ?' - the sort of results which might bring about real improvement in the way people become educated and learn. This is, perhaps, to put the issues at stake rather crudely, but perhaps also to put them in the way that a politician or administrator and a teacher or student might wish to put them.

When each participant enters his discussion group, he will carry with him a host of examples drawn from his own experience in his own country. But those who prepared this Colloquium thought it necessary that discussion should be based on some shared experiences, in the form of accounts of actual experiments and situations abroad which each will have read and each will thus be able to debate, certainly not from the same standpoint, but with the same grasp of the relevant information. For this purpose the seven Case Studies in this volume have been prepared. The first three of these relate primarily to the theme of the connection between research and policy; the last four to that of the effects of research in terms of innovation in the classroom.

The authors of the Case Studies set out to answer six questions in each given case, questions which the discussion groups might also wish to take up. These were :

(i) How were the problems at issue defined, and who (researcher, "grass-roots" or policy-maker) defined them ?

(ii) What kind of research was done, by whom was it done, who financed it, and how was it evaluated ?

(iii) What were the results of that research, firstly as formulated by the researcher himself, next in terms of their effect on policy decisions ?

(iv) By what means, and how effectively, were research conclusions transmitted to schools and teachers, if they were at all ?

(v) What was the relative importance of research findings in comparison with other political, social or economic factors ?

(vi) Have the practical results of reforms confirmed the promises of research findings, or not ?

The discussion groups are invited to compare the fruits of their own experience with the conclusions suggested by the Case Studies.

The two Simulation Papers, on the other hand, are there to provide a possibly escapist release from the realities of one's own and others' experiences. Each paper presents, in the form of a report by a group of independent experts, the imagined issues and problems of an imaginary country; although the papers were drawn from life and based on existing documents. Papers of this kind would, in a real life situation, normally be submitted to the Ministry of Education for discussion and possible action.

A meeting would perhaps have taken place between a number of Ministry officials, heads of research organisations, and representatives of local education authorities, schools, training colleges and teachers' organisations. The tone of the discussion could be expected to be political as well as technical, and the interested parties would no doubt give vehement expression to their various viewpoints. The members of the discussion groups are invited to select one or both of these reports and to discuss them as if they were members of the meeting described above.

Finally, the List of Issues presented by Professor A. Schorb raises a number of questions which may be current problems in all the countries represented here, and should be read as a background document to the Case Studies and an introduction to the Simulation Papers.

It remains for the Secretariat to express its sincere gratitude to the authors who contributed the papers published in this volume, and wish participants in the Colloquium a happy and stimulating time.

Strasbourg,
September 1973

Niels Borch-Jacobsen
Director of Education and of
Cultural and Scientific Affairs

Case study 1

EDUCATIONAL REFORMS AND EDUCATIONAL RESEARCH IN FRANCE

Louis Legrand

Director of Research
Institut national de recherche et de documentation
pédagogiques (INRDP)
Paris

1. GOALS

Reforms introduced over the last twenty years have generally been aimed at reconciling the educational system with a number of changes in the socio-economic system, e.g.

- urban development and economic changes in France;
- increased concern for a more democratic system capable, inter alia, of producing school-leavers better suited to present economic needs;
- advances and innovations in the academic sphere (new disciplines).

These three factors have generated change

- in the structure of the educational system and
- in the content of curricula.

2. STRUCTURAL REFORM

(a) Extension of the school-leaving age from 14 to 16 and corresponding reorganisation of lower secondary education (for the 11 to 16 age group)

The main features of the previous system were its parallel, sociologically differentiated branches.

The reform introduced middle schools for 11 to 16 year olds known as Collèges d'enseignement Secondaire - CES (Colleges of secondary education).

Their structure is comprehensive, incorporating the former three main branches (Lycée, Collège d'Enseignement Général - CEG, and upper primary, the latter being now known as the transition branch).

Each of these comprehensive schools is a neighbourhood school and serves a specified catchment area.

Since 1963 the process of gradually standardizing the curricula in all branches has continued and they should now only differ in the teaching methods used.

Some problems are still outstanding.

The existence of three different sections in a single school raises the as yet unsolved difficulty of the selection of the pupils to be placed in each section.

The use of distinct teaching methods in each section is still a pious hope, since they have never been scientifically defined.

The less able 14 to 16 year olds raise more serious problems. The provision made for them has fluctuated between full-time education in a CES, part-time education in a CES and a firm, and full-time education in a technical school. No solution has yet been decided on.

(b) The reform of primary education (1969)

The creation of Colleges of secondary education for all 11 year-olds altered the goals and structure of primary schools and led to the 1969 order establishing the three-part day (resulting in a weekly time-table of 15 hours of French and Maths, 6 hours of physical education, and 6 hours of discovery learning activities). Active methods are becoming the rule.

(c) The reform of upper secondary education

(i) 1965

In order to complement reforms at lower secondary level, Mr. FOUCHET, then Minister of Education, decided to reform the upper secondary level. Separate sections (science, arts and technical) with early specialisation were introduced from the 5th year onwards.

These schools were also reorganised to serve catchment areas corresponding to those of the CES.

(ii) Reform at present under study

The FOUCHET reforms were counterproductive because early specialisation proved detrimental to the science and technical sections. Hence the return to a more polyvalent curriculum and the introduction of an options system by which it is hoped to come more into line with economic needs.

There is also an attempt to develop spontaneous learning on the part of pupils through the introduction of independent work.

3. CURRICULUM REFORMS

There have been official reforms in mathematics at the primary and secondary levels, and in French at the primary level. (See Appendices)

There are studies in progress directed towards the reform of the French curriculum at secondary level and of the curricula for scientific and technical education.

4. TEACHER TRAINING

Teacher training is at the core of all educational reform in France. Initial training for primary school teachers has been extended by a year and a start has been made with a permanent system of in-service training.

Changes in the training of secondary-school teachers which will introduce the subjects of psychology, sociology and teaching methods into the course, are at present under study.

The educational system, which still operates very selectively, continues to mount an obstinate resistance to changes in the structure and content of education.

5. THE ROLE OF RESEARCH AND EXPERIMENTATION IN RECENT AND FUTURE DECISION-MAKING

(a) Traditional procedures

In general, the reforms described above were introduced without any systematic preliminary experiments.

The traditional system involves a study group composed of specialists who prepare official texts which are subsequently formally published as Ministerial Orders or Circulars.

The General Inspectorate has an important planning, promoting and supervisory role.

Under this system, experiments have very rarely preceded decisions.

None were conducted before establishing the CES or introducing the Fouchet reforms of upper secondary education. At best, the experiments served as food for thought for the experts, as was the case with the reform at the primary level, which gave general effect to the experiments on the three-part day, carried out ten years previously.

Where experiment does precede a decision to introduce a reform it takes the form of a semi-general trial with no objective control. Instructions regarding such trials are given in a Ministerial Circular, and the results are evaluated by inspectors through visits and qualitative reports. The special instructions regarding teaching methods in the transition classes were drawn up in this way.

In the case of the revision of curricula (mathematics, French and physics), there were preliminary scientifically controlled experiments with regard to content. In the case of mathematics, for example, there were four years of trials involving 80 teachers directed by university lecturers in mathematics under the aegis of INRDP, but no psycho-pedagogic evaluation was made. (cf. Appendix I) The same holds true of the reform of French teaching at the primary level (cf. Appendix II).

(b) Experimentation as a fortuitous by-product

The real experimentation goes on, however, outside the context of official decisions. This has been known to happen when a study has been commissioned by the authorities and a decision taken prior to its completion. For example, the regulations governing pupil guidance in the final year of lower secondary school were issued while a scientific experiment was still in progress at the INOP.(1) The decision could therefore not take account of the findings of the research.

This is also the case with mathematics, in which field objective experiments with the new curricula are in progress. (A joint INRDP-INOP project.)

It is to be hoped, but by no means is it certain, that this work may lead to changes in the reforms decided on.

Experimentation can also take place alongside the general application of innovations ; as is happening at present in connection with the colleges of secondary education, with a research project designed to evaluate the efficiency of the official system and simultaneously to test a more flexible system using differentiated teaching methods.

(c) Experimental research as a preliminary

Ministry Departments seem at present to be coming round to a healthier view of the relationship between research and decisions to introduce reforms. Those currently under study for upper secondary education are the subject of experiments involving not only qualitative testing but also objective evaluation.

It should, however, be pointed out that the decision-makers allow research bodies so little time that the decisions will probably be taken before the findings can provide an objective view.

6. CONCLUSION

In France, as everywhere else, the urgent need for action seems to conflict with the

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(1) Institut National d'Orientation Professionnelle (National Institute for Vocational Guidance)

patience which is so essential for the building up of a body of objective knowledge. However, it should perhaps also be pointed out that this conflict is a fairly recent phenomenon in France, where the importance of scientifically-conducted experimental research in the educational field has not always been and does not yet seem to be fully realised.

Although the funds allocated to this sector have increased steadily over the last ten years, they are still quite inadequate.

Secondly, it seems essential to stress the need for objective experiments in the actual classroom, since the laboratory seems hardly the best place in which to discover how best to introduce innovation into the educational system.

APPENDIX I

Reform of mathematics teaching
in lower secondary education
(pupils aged 11 to 15)

This Appendix comprises two papers by :

1) André REVUZ, Professor of Mathematics at the University of Paris and Director of the Institut de recherche sur l'enseignement des mathématiques de Paris (Paris Institute for Research into the Teaching of Mathematics)

and

2) Louis LEGRAND, Director of Research at the INRDP (National Institute for Educational Research and Documentation).

These papers are the introductions prepared for the report reviewing four years of experiments in lower secondary education.

An objective study to evaluate the reforms at this level has since been undertaken by the National Institute for Vocational Guidance (INOP) at the request of the INRDP and with its expert assistance.

This research will be concluded in 1974.

1) "The end of the 1970-71 school year marks the end of a series of experiments on mathematics teaching at the lower secondary level.

Perhaps a brief summary of their historical background in order to highlight the main features and consider their possible extension would not go amiss.

It is now more than 15 years since the Association of Mathematics Teachers in State Education realised the need to introduce radical changes in the teaching of their subject and requested the means to do so.

However, it was not until September 1966 that the Ministerial Committee responsible for the organisation of all aspects of this reform met for the first time under the chairmanship of Mr. A. Lichnerowicz. By early 1967 the Committee had already broadly outlined its activities in its preliminary report. They included the proposal to establish research institutes for mathematical teaching and plans for a series of educational experiments.

Although the first of these institutes did not come into being before late 1968, it nevertheless proved possible to start classroom experiments at the beginning of the 1967-68 school year, owing to the existence of the IPN (National Educational Institute) (1).

Teams of teachers who were already working voluntarily were granted official recognition and assistance in the form of time off from regular duties and specially organised courses. This was the first time experiments had been conducted along these lines in France.

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(1) The IPN has since become the INRDP (National Institute for Educational Research and Documentation).

Five research centres involving 80 teachers were established at Bordeaux, Lyons, Marseilles, Paris and Poitiers. It would have been possible to have more teams from the outset had there been a less niggardly attitude to allowing time off from regular duties. However, other teams were set up a year later both in these centres and at Caen, Clermont, Grenoble, Lille, Limoges, Montpellier, Nancy, Rennes, Rouen and Strasbourg.

Initially, they involved about 300 teachers and there were, so to speak, two waves of research workers. The first cleared the ground and the second rounded off the work of the first, making it possible in particular to examine the problems connected with the use and passing on of the earlier results. If this very difficult and important work has been productive, it is essentially due to the fact that co-operation persisted throughout the four years, facilitating harmonization of the main lines of research without restricting individual freedom of action. The complex problems inherent in any form of teaching, the difficulty, if not impossibility, of really identifying the different factors involved, the many prejudices surrounding education and at the same time, the importance of what is at stake, mean that it can easily become an area in which passion blinds judgement, and every research worker needs to add to his enthusiasm an uncompromisingly critical approach to his own work. This can only be achieved with teams large enough to associate people with different temperaments, but not so large as to jeopardise their cohesion. We must here pay tribute to the teams which, despite the many external stimbling blocks they had to negotiate, persevered throughout the four years, losing neither faith nor enthusiasm.

The teams at the grass roots each consisted of teachers in the same school, but meetings, often held weekly, brought together teams in the same town, or their representatives. At national level, the IPN organised four annual courses which were attended by the members of all the teams. Each course included a report on new topics and an initial purely mathematical study which was afterwards given a didactic slant with a view to the teaching of the subject.

From the outset, teachers in higher education (of whom some became the Directors of the first IREMs(1)) worked with the teams. It should be stressed here that this research was aimed at working out new curricula and new teaching methods. It is arbitrary and dangerous to attempt to separate the content and the method of presentation of a mathematics course. No amount of teaching skill will make an incoherent presentation comprehensible and difficulties in teaching this subject derive more often than not from an inadequate analysis of the structure of what it is sought to teach. On the other hand, even the most straightforward mathematical concept will remain a closed book to a pupil who is not placed in the intellectual, and no doubt also emotional, climate that will enable him to face problems squarely and want to solve them.

The work of these teams considerably helped the Ministerial Committee establish the curricula now in use in the first and second years of secondary schools. The demands of an overloaded timetable and the consequent inherent difficulties made it impossible to achieve such perfect harmonization for the third and fourth year curricula. The committee was indeed able to take the relatively bold step of introducing real numbers into the third year syllabus in the wake of a study of approximate calculations with decimal numbers, solely thanks to the painstaking work of the research teams, which had shown that this was possible.

The Committee's work is still not over, nor therefore is that of the research workers.

In its original work programme, the Committee had planned that curricula would be revised every four years. Although no radical changes in the current ones are to be expected, it is nevertheless certain that they will call for adjustments and improvements in at least a few respects. It is to clear the ground for these that the teams, both old and new, are to be asked to start a new series of experiments beginning with the first secondary year and another one beginning with the fifth year.

Perhaps it would be appropriate to define their role. It has been rightly said that any

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(1) Instituts de Recherche sur l'enseignement des mathématiques : mathematics teaching research institutes

practising teacher is, by the very nature of his job, conducting an experiment; and at the same time, no less rightly, that so-called "wild" research is to be condemned. While research done in isolation, without supervision, by people devoid of critical judgement,is dangerous, it should be stressed that in any case no isolated research, however satisfactory, will carry very great weight. If mathematics teaching is to continue to progress, and there is still much further to go, it is essential that teams should continue to operate with official recognition and that their task be made easier and their findings disseminated and put to use.

The INRDP, which has taken over the IPN's responsibilities in this field, and the existing and future IREMs, whose essential role is research, must pool their resources in a genuine co-operative effort. They have an enormous task and all possible help should be provided, but there should be no question of granting a monopoly of research. The diversity of methods of approach and the autonomy of the different teams, which in no way precludes their regular co-operation, must be preserved if it is hoped to undertake proper research."

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2) "I trust that the mathematician who will read these lines written by a non-mathematician will view my presumption with indulgence. Certain jobs carry inescapable obligations and what follows stems from just this.

At the end of four years of experiment, I want first of all to express my gratitude and admiration to the teams who have worked so hard to carry out our research programme. This has been exemplary in one very general respect: it has demonstrated the profitability at both local and national levels of team-work on a specific educational innovation uniting the efforts of people of different qualifications and standing (secondary school teachers, university professors and lecturers, state inspectors and administrators) as well as equally diverse bodies which were under no obligation to collaborate, namely the Ministerial Committee, the IREMs and the INRDP. This operation, which was set up very democratically by the research workers themselves, has been a model for the work of my department. Those taking part in other innovation projects which we are conducting have been inspired by this dynamic approach and have repeatedly demonstrated how fruitful it can be.

However, what follows also demonstrates its limitations. Although some may believe that the innovation stage is over, a careful reading of the reports will soon show that the research as such is only beginning. The devising of new methods and syllabuses is the gestation stage. But once the ground is cleared it must be followed by more work in depth and an evaluation of the findings. Many problems still remain.

I can see a number and these are often inter-related.

The first and most obvious one is that of judging objectively what is and what is not possible. The reports frequently use phrases such as "the majority of pupils readily use... - many pupils find it less easy..." Obviously these subjective assessments must serve as starting point but equally obviously they can only be used as hypotheses in attempting to achieve greater precision. The time has come for a controlled classroom evaluation (defining type of pupil, methods used) of the effectiveness of the new teaching in relation to its own content and goals. A joint INOP-INRDP study is being conducted on this point with the help of teachers and psychologists. Alongside this specific activity, there is a project in progress in 17 CES to evaluate the different courses, including mathematics within the differentiated teaching groups. This should provide at least a partial answer to the second problem.

It seems from reading the reports that the choice between different approaches and methods depends on the conception people have of mathematics, the goals ascribed to mathematics teaching and the types of pupil for whom it is intended. Now, to individualise teaching means first of all defining the teaching method and adjusting it and the syllabus to the recognised needs of the school and the pupils.

If this problem is not solved the discussion of goals is likely to come to nothing. There is something very worrying about reading judgements, emanating from different people, to the following effect: "the syllabuses aim more at inculcating mathematical know-how than at teaching pupils to make mathematics. They seem designed for future specialists. It is sad for us to note that the personal thinking called for diminishes dangerously from the first to the fourth year of secondary education"; - "the Committee draws attention to the excessively dangerous nature of the third and fourth year syllabuses when used in a selectively structured education system" - or again, something rather surprising, I confess, "it is necessary to teach technology, geometric drawing and physics but this must be done independently of the mathematics course". Rather naively, I was under the impression that new mathematics was supposed to wipe out the distinction between pure and applied mathematics.

Hence, in my opinion, the urgent need to define clearly:

1. the goals to be pursued, which are not necessarily the same for all pupils although they may be directed to a common end;

2. the pupils' real chances in relation to the goals defined and consequently the specific ways and means for pursuing and reaching them.

The answers to both these questions are outside the scope of mathematics as such. On the one hand, they must be sought in sociology, politics and philosophy, and on the other in psychology. They involve the taxonomy of goals, the objective description of educational behaviour, quantitative evaluation of achievement and of the effective transfer of various behaviours in relation to various goals.

Consequently, whatever the importance in other ways of the innovations which have just been introduced, their fundamental significance in my opinion is to open the way to further educational research which can gain from them and at the same time shed new light on them.

APPENDIX II

Reform of the teaching of French
at the primary level (pupils aged 6-11)

New instructions on the teaching of French in primary schools have just been issued in France. (Circular No. 72-474 of 4 December 1972).

Their introduction follows several years of classroom experiments (see below the text of an address by Mr. ROUCHETTE). The text is a compromise based in part on the main lines of thought embodied in the experimental instructions drawn up as working hypotheses during the course of the experimental research.

The instructions have been issued in spite of the fact that the experiments are not yet concluded and the evaluation stage is still in progress.

They came in the wake of a bitter politically-inspired controversy in which the Académie Française came out against the reform, whereas the Ministerial Committee on the teaching of French (the "Emmanuel" Committee) approved them almost unanimously.

Address by Mr. ROUCHETTE, General Inspector and Chairman of the Ministerial Committee on the reform of the teaching of French in primary schools, at a Round Table held on 20 December 1971 by the Société française de pédagogie.

"I should like to get to the heart of the matter and begin by telling you of the origins of an undertaking which some people see as involving a great cabal bent on destroying culture and ruining fundamental universal values.

It all began in 1962, when Mr. FOUCHET was Minister for Education and Mr. CAPELLE Director-General responsible for school organisation and curricula. Mr. Capelle wrote to me on 23 November saying that recent meetings had once again stressed the need to take a new look at teaching in primary schools which was too rapid and needed more pruning.

It seemed that it did not make sufficient allowance for the fact that the extension of compulsory education made it unnecessary to treat the last year of the lower secondary school as a school-leaving class.

Mr. Capelle therefore asked me to look into the problem and set up a Working Party composed of a nursery school Inspector, three State Inspectors (inspecteurs généraux), one educational region Inspector (inspecteur d'académie), one local Inspector (inspecteur départemental de l'Education nationale) and Miss LORDON.

On 15 May 1963 I submitted our proposals to Mr. Capelle, saying what teachers wanted was a clear definition of teaching at all levels, beginning with the primary school.

We accordingly suggested that:

1. that a small committee composed of CEG and Lycée teachers and an educational psychologist should be asked to define the basic knowledge that an 11 or 12 year-old child needed in order to progress to lower secondary education;

2. that another committee composed chiefly of experienced primary school teachers be asked to investigate how the knowledge required could best be taught from the infants class through to the final year of the lower secondary school.

We also felt it essential to avoid any break in continuity between the primary school and the lower secondary school. Such was the general purport of the conclusion of this letter, which reads as follows :

"Lower secondary and primary school teachers must immediately take stock of two facts - the former, that they will henceforth be responsible for all children over the age of 11 to 12, and the latter that their course is no longer an end in itself since it has become simply a stage in compulsory education. It is therefore important to avoid any break in continuity by discovering from the first group what they consider desirable for their pupils and asking the second group to plan their teaching to this end."

On 17 May 1963 Mr. Capelle accepted these proposals. "Primary education," he wrote, "must become a preparation for lower secondary education" and he suggested, as a matter of urgency, that the first committee should meet to discuss "What should have been learnt at primary school ?"

This then is how it all began. It would be a waste of time to go into too much detail and enumerate all the aspects of these committees' work and research, but it does nevertheless seem essential to stress the following points :

- The Working Parties were set up by the Directorate-General responsible for school organisation and curricula and the unions were represented on them.

- The meetings, organised by the Ministry of Education, were held either at Sèvres at the Centre International d'Etudes Pédagogiques (International Centre for Educational Studies), or at the Ministry.

- Minutes of the meetings were regularly submitted to the Director-General and to the Minister's Private Office.

- Several meetings were chaired by Mrs. HATTINGUAIS, Director of the CIEP, and by Mr. J. ALLARD, Technical Advisor to the Minister.

In short, for we must deal with these absurd allegations, everything took place quite openly; there was never any question of trying to cloak our activities. Had there been some kind of "plot" we would have been rather more careful.

For the rest, I shall just distinguish two phases in our research.

1. From 1963 to 1965 we devoted ourselves primarily to studying the lines along which the primary school teaching of French could be reformed, defining general principles and determining objectives. Two documents were prepared. The first, by Mr. CARLES, a Regional Inspector (IDEN) for Paris, appeared in 1964. As the meetings went on it became apparent that some points of doctrine would have to be re-examined, so in 1965 Louis LEGRAND agreed to revise and rewrite the text for the Committee. It was then submitted to the Directeur de Pédagogie (Director of Educational Methods), who considered that it could and should be published by his Department, thus making it official.

Neither Louis Legrand nor I approved of this. We felt that experiments were needed to prove or disprove some of our hypotheses. The Director agreed to this proposal.

2. From 1966 onwards, the Educational Research Department of the IPN assumed responsibility for appointing research teams and promoting and co-ordinating their activities. There were 25 of them at the outset but today there are more than 80, with a total membership of more than 600 primary school teachers, Regional Inspectors, lecturers and heads of teacher training colleges, psychologists and linguists.

In 1969 a seminar was held so that the representatives of the various teams could express their viewpoints. A text was prepared at that time but it was only a preliminary draft. The Emmanuel Committee which met in the interim in the spring of 1970 approved its general principles. Mrs. ROMIAN of the Research Department, and Mr. G. JEAN, a lecturer at the Le Mans Teacher Training College, eventually revised and abridged this text in the summer of 1970. In October of the same year the Emmanuel Committee approved it in this form and it was published with a few amendments in issue No. 47 of the review "Recherches Pédagogiques".

That is where we stand now. That was the background of the undertaking."

It should be added that since Mr. Rouchette's speech

- experimentation is continuing

- an official text has been published reforming the teaching of French in primary schools (Circular no. 72-474 of 4 December 1972).

This text was drawn up by an ad hoc committee at the Ministry in consultation with the General Inspectorate.

Case study 2

FROM RESEARCH TO INNOVATION : THE SCHOOLS COUNCIL

Jack Wrigley

Schools Council
London

Professor Wrigley would like to acknowledge the very great help provided by his colleagues in writing the two reports presented by the Schools Council : and in particular Mr. P.H. Clift for the study "From Research to Innovation : the Schools Council", and Mr. F.H. Sparrow for "The Humanities Curriculum Project : a Case Study".

Introduction

In Britain the current annual budget for educational research is approximately £3.1/2 millions (1). Of this about £1.1/4 millions is administered by the Schools Council. In order to understand its function within the education system of England and Wales (Scotland is administered separately) it is necessary to review its origins.

The Schools Council came into being in 1964. To date it has committed almost £6 million to educational research and development (2). A report (3) by the central government's Department of Education and Science (DES) in 1966 summarised the factors which led to its establishment:

> "In this as in many other countries there has been a growing consciousness of the need to reappraise syllabuses and curricula. Until comparatively recently changes in the school curriculum have taken place only through the slow spread of ideas among teachers (helped by the efforts of HM Inspectors) or through the work of committees set up for some specific purpose. The rate of change did not keep pace with the needs of the times or provide a speedy response to developments in particular branches of knowledge or to changes in the general view about the aims of education. The Schools Council for the Curriculum and Examinations - or the Schools Council as it is now generally called - grew out of a recognition by all branches of the education service that co-operative machinery was needed to organise a more rapid, and more effective, response to these changes."

The purpose of the Schools Council, then was to provide means of increasing the rate of curricular innovation in schools for pupils aged two to eighteen years.

A new institution was required for this purpose because of the decentralised character of the educational system of England and Wales. Traditionally the Secretary of State for Education is excluded from direct influence in the school curriculum. In practice control of what is taught and the way in which it is taught is almost entirely the responsibility of individual head teachers. It was therefore necessary to involve the teaching profession in any attempt at deliberate and accelerated change in the curriculum. The necessary finance could not however be provided by teachers, and at present is provided in equal parts by grants from the central government and from the local education authorities. The teaching profession, through its majority representation on most committees, effectively controls the Council's activities. The Schools Council, then, represents the essential pluralism of education in England and Wales. Its constitution acknowledges the dispersal of power within the educational system and it provides a meeting point for the divergent interests.

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(1) Professor J.D. Nisbet, Chairman: Social Sciences Research Council; Educational Research Board. (SSRCERB) Speech at the Annual Conference of the British Psychological Society, Education Section, Lancaster. September 1972.

(2) For a breakdown of this sum into commitment by subject area, and age level, see Appendix 1.

(3) Department of Education and Science, Reports on Education 29: The Schools Council, London, Department of Education and Science.

Strictly speaking only a minor part of the Council's funds are spent on educational research as such. The bulk is spent on curriculum development. However, a dichotomy between research and development in this setting is rather artificial. The process of curriculum development undertaken by project teams involves research at every stage; there is a complex interaction between the two activities. It is however justifiable to make a distinction between fundamental and applied research. For the present the Council sees itself as sponsor of applied research rather than fundamental research and has publicly stated its position as follows:

(1) "1. The Schools Council should in general undertake fundamental research only if no other body or person was qualified and prepared to do it.

2. The yardstick to be applied should be that research work was concerned with work in the classroom." "

The position is not immutable of course.

Constraints on Innovation:

Two recent studies reveal something of the constraints on curricular innovation within the decentralised education system of England and Wales.

The first is a study (2) involving primary school teachers in England. It was part of a larger project, commissioned by Schools Council, which set out to reveal and examine the aims of primary and nursery education (3).

In this study a sample of teachers was drawn from schools where the rate of curriculum innovation was judged to be average by their local education authority. Teachers were asked to consider what factors influenced them in determining what they taught and the way in which they taught. They were then asked to rank these influences in order of importance. At the school level, the strongest perceived influence was the head teacher, followed by the teachers' own colleagues. Bodies such as the National Foundation of Educational Research (NFER), the Nuffield Foundation and the Schools Council, which in Britain are the major national sponsors of educational research and development were perceived as being "only of little influence". This was repeated at the level of classroom operation also, the only important different being that in this context the teacher perceived his own influence as the most potent determinant of what he taught and how he taught. This finding entirely agrees with the teachers' traditional autonomy in curricular matters. Regarding attitude towards curricular change, the teachers in this study were neutral, being neither in favour, nor against change in the curriculum in the primary school.

An earlier study of teachers and research (4), commissioned by the Department of Education and Science (DES), the Schools Council and the National Foundation for Educational Research (NFER) and carried out by the NFER in 1968 reached the following general conclusions:

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(1) Minutes of the Eastbourne Conference of Programme Committee. October, 1971

(2) Purpose, Power and Constraint in the Primary School Curriculum. (1973) Macmillan Education for the Schools Council.

(3) Aims of Primary and Nursery Education. 1968-72. School of Education. Birmingham University.

(4) Cane E., and Schroder, C. (1970). The Teacher and Research, Slough NFER

(i) Of a representative sample of emminent educational researchers, only two were familiar to the majority of teachers.

(ii) The Nuffield Foundation, the NFER, the DES and LEAs were reasonably familiar to the majority of teachers as sponsors of educational research and development. The Schools Council, despite the attempts to weave the teaching profession in its very fabric was reasonably familiar to only the secondary school teachers in the sample. 1968 was, however, relatively early days in the life of the Council. (The Council was founded in 1964).

(iii) Teachers were generally unfamiliar with the two major British Journals which deal directly with educational research; the British Journal of Educational Psychology and Educational Research. However, the Times Educational Supplement, and The Teacher and Teacher's World were read at least occasionally by the majority of the teachers, and secondary school teachers tended to read the publications of their subject associations.

(iv) In 'free comments' from the teachers in the sample, various criticisms about the way in which researchers communicated their findings to teachers were made. It was suggested that results were not expressed in terms which they could understand; that they were published too late, in expensive books, or (to them) obscure journals. Researchers were accused of unwillingness to offer advice or even hazard opinions. There appeared to be a genuine desire on the part of teachers for in-service courses based on research findings and for research digests. Overall, the teachers' conception of their professional role and their typical teaching load was not conducive to the spontaneous absorption of research findings.

The possibility of actual resistance to the implementation of innovation based on research, resulting from the extra effort implicit, was not directly mentioned in this investigation, though it intruded obliquely in the critical remarks made by teachers about a lack of realism and classroom pragmatism which they detected in the activity of researchers and in their reports.

Regarding teachers attitude towards change mixed feelings were revealed in this study. Some teachers in the sample felt that research provided them with an impetus to reassess their own work. On the other hand, there was evidence of a certain cynicism about the possible selective use of research findings. Some teachers expressed the view that involvement in innovation was not itself necessarily a good thing. There appeared at that time (1968) to be a deeply and widely held feeling abroad that junior schools (catering for children from 7 to 11 years of age) at any rate had undertaken just about as much innovation as they could stand. Proper evaluation of alternative curricula was also felt to be lacking by both primary and secondary teachers.

The Problems

The problems confronting the Schools Council are then :

(i) how to provide an acceptable impetus for an increased rate of change in the curriculum;

(ii) how to persuade teachers that curricular changes should be based on careful research and development;

(iii) how to communicate new ideas, new content, new methods, new ways of organising schools, and especially, new aims to teachers.

These problems have to be solved in the context of a decentralised education system of considerable local variety, and a teaching profession deeply aware of traditional curricular freedom.

Attempts at Solutions

The procedures for funding curriculum research and development by Schools Council are designed purposely to attempt to overcome the first of these problems by involving teachers at every stage from earliest consideration to completion. Proposals for curriculum research and development, mostly put forward spontaneously from a wide range of sources within the educational domain are first presented in summary form to the senior policy committee (Programme Committee) for consideration in principle. Those which are judged to be prima facie acceptable are then submitted in the form of detailed research and development designs for examination by subordinate committees. The proposers may be called to meet these committees. Proposals which fail to meet requirements at this stage go no further. Those which succeed (with or without amendment) return to the major policy committee for a final decision based on perceived merit relative to other concurrent proposals within the funds available. The purpose of having a teacher-representative majority on the committees which examine each proposal is to attempt to ensure the acceptability to teachers of the work undertaken. This process of early teacher involvement is costly in time and money (it leads for instance to a substantial proportion of the 400 or so committee meetings held by Schools Council in London each year) but is central to the conception of Schools Council and enshrined in the constitution which was modelled on the recommendations of the Lockwood Committee (1). Almost all of the work sponsored by the Council is carried out on a decentralised basis. Universities, colleges of education and more rarely local education authorities act as grant holders for projects and project directors take responsibility for day to day running. Once a project has been approved the Council maintains interest in a variety of ways. A project consultative committee is set up composed mainly of serving teachers and representatives of Council committees which approved the work. This committee meets the project team at regular intervals to discuss progress and offer advice. A senior member of the Council's central staff is assigned responsibility to act as the Council's day to day contact with the project and to report on the project's behalf to the Council's committees as required. He also advises the project director on Council procedures and policy and brings in specialist colleagues as the need arises. In this way, in spite of the decentralised nature of the Council's work an active involvement is maintained. This active sponsorship was recently manifested negatively in the Council's refusal to allow publication of the Humanities Project's 'Race Pack', a decision reluctantly made on grounds of the fears expressed by experienced serving teachers about the possible impact of the materials on some school situations.

In addition to teacher involvement in the mechanics of the Council, teachers are also involved practically in schools where research and development is taking place. The number who have been involved grows year by year, and is now substantial. During the school year 1971-72 for instance (the latest for which complete figures are available) 567 schools were involved in trials of Schools Council project materials and ideas. The teachers in these schools have played an essential part in a process which may have included any or all of :

(i) an examination of the aims underlying their work ;

(ii) an examination of the means by which they attempt to achieve these aims;

(iii) the development of alternative strategies and materials and their evaluation.

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(1) Ministry of Education (1964). Report of the Working Party on Schools Curricula and Examinations. London. HMSO.

As a result, their perception of their role will probably have changed. Hypothetically they will be more aware of curriculum development as a proper part of this role. Having been involved, they should also be aware of the contribution which educational research has to make to curriculum development. Evidence is becoming available which supports this hypothesis (1). In connection with such 'teacher development', Teachers' Centres have made a considerable contribution. They first came into being at about the time when Schools Council was established. Their origins and function are as follows:

In the early 1960s, in its research and development projects in primary mathematics, science and modern languages, the Nuffield Foundation (the major sponsor of educational research and development prior to the establishment of Schools Council) was instrumental in bringing teachers together locally, by requiring that the local education authorities which participated in their projects provide a centre where trial school teachers could meet to share experiences, receive support through local courses and prepare materials. From its inception in 1964, the Schools Council continued this policy, considering that opportunities for teachers taking part in projects to meet and to discuss work together in their local situations essential to its philosophy of curriculum review and development. Part of the function of the team of Council Field Officers, at present 10 strong, is to ensure two-way communication between the Centres and the Council.

There are at present about 500 centres in England and Wales. The number of purpose-built Centres is, however, small. Staffing of Centres varies widely. About half have a full-time Warden, a further quarter a part-time teacher/warden, the rest are run by spare-time teacher/wardens.

Thus by teacher control over what research and development is undertaken and active involvement in projects by teachers' representatives on Council committees and teachers in trial schools the Council has attempted to solve the twin problems of how to provide an acceptable impetus for an increased rate of innovation in the curriculum, and to persuade teachers that such innovation should derive from sound educational research and development.

The third of the interrelated problems confronting Schools Council has been called the problem of dissemination. The success of projects rests, not only on their intrinsic value, but also on how effectively the ideas which they embody are communicated to teachers who have not been involved. In 1968 the Schools Council established a newsletter, 'Dialogue'. It is published three times a year and distributed free to schools, local education authorities, Colleges of Education, and universities. Its purpose is to inform the educational world as widely as possible of the activities of the Council and about the projects which it sponsors. Following misgivings about its effectiveness particularly in communicating with teachers, in 1972 the Council's central research team were instructed to conduct an investigation into its distribution and impact on the teaching profession. A questionnaire was sent to a large representative sample of schools, and the responses analysed. The detailed findings of this investigation are confidential to the Council's senior policy committees and its officers. The evidence from the studies (2) cited earlier in this paper was of teachers' relative indifference to communication from such bodies as the Schools Council. It was therefore to be expected that the response to 'Dialogue' would be similar, and this expectation was fulfilled. In general 'Dialogue' was getting to schools, and being read by some teachers. However, it has certainly not become the total answer to the problem of keeping all teachers informed of the activities of Schools Council. Indeed, it is not easy to cater for the whole teaching profession in one periodical. There are clear divisions in function, academic background, and hence interest between, for instance, primary and secondary school teachers.

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(1) SC73/50 People in Classrooms: A Symposium from the Humanities Curriculum Project. Paper to Schools Council 1973.

(2) The Teacher and Research, and Purpose Power and Constraint. op. cit.

There may also be other divisions within the profession almost equally important in determining what information is most appropriate, and to be entirely successful a publication has to be produced with a specific, unified readership in mind. It is likely that various changes in 'Dialogue' to broaden its impact on the teaching profession will result from this study.

Recently, however, there has been a realisation on the part of Schools Council that information alone, even if effectively communicated, is not enough to produce and sustain a more rapid rate of curricular innovation. In addition advice and help with problems of adoption of new curricula are required. As a consequence a working party broadly representative of the education service was set up with the following brief:

(1) "to consider the place of dissemination (of innovation) and inservice training in the work of the Council with particular reference to Curriculum Projects financed and supported by the Council and to make proposals (concerning changes in strategies likely to maximise the impact of Council work) to Programme Committee."

The Working Party has taken evidence from the whole range of interests in education concerning the possible reasons for the slow rate of Schools Council engendered innovation in schools. To date (February 1973), it has not made formal proposals to Council. What it has tentatively concluded however certainly does not constitute a programme for the promotion of Schools Council originated innovation in schools. Promotion of any particular brand of innovation is seen as inappropriate and undesirable by the working party because it would represent the beginnings of a reduction of the traditional freedom in curricular matters enjoyed by teachers. A full knowledge of the work that the Council has done, and the availability of advice in its adoption which dissemination represents clearly enlarges the range of choices open to teachers.

The problems confronting Schools Council are not amenable to instant solutions. In spite of the vision which led to its establishment and the very full participation of teachers provided by its complex committee structure, it remains a central agency in a decentralised system. It is still at the stage of exploring means of fuller two-way communication with that system. The ideal of a newsletter in singular form may have to be modified to meet the needs of a divergent profession. Means will have to be found for communication with the education system which go beyond mere information. It is timely for the Council to increase dissemination activities. Such a move is likely to be strongly supported in the immediate future by changes in the education system as a whole resulting from the implementation of the recommendations of the James Report (2). These include far-reaching changes in the initial training of teachers, and an increased emphasis on in-service training, a factor frequently cited as a necessary concommitment of curricular innovation. Similarly the development of the still very new and varied Teachers' Centres and a discernable general trend towards more 'openness' of attitude on the part of many schools are likely to support dissemination.

Research Based on Innovation

The major topic discussed in this paper is that of innovation based on research. However, it was earlier asserted that there is a complex interaction between curriculum research and development. This interrelation is most readily seen in the evaluation of projects. Evaluation in this sense spans a continuum from the collection and analysis of feed back information in developing ideas and materials to final judgements about finished products. The strategies adopted range in type from the 'classical' approach in the psychometric tradition, to an 'anthropological' research paradigm in which attempts to obtain 'hard measures' are abandoned in favour of an intensive study of a curriculum development as a whole. Evaluation has been

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(1) SC 72/1332

(2) Department of Education and Science. Teacher Education and Training, London. Her Majesty's Stationery Office. 1972.

a feature of Schools Council projects from the beginning of the Council's life. The development of a policy towards evaluation and of the appropriate strategies was described retrospectively by an ex-member of the Council's senior staff (1).

> "The next question the project must answer is whether the materials, and the total project 'package' are in fact achieving in the classroom the results they hope for. In other words, they must establish some form of 'concurrent' evaluation, to collect evidence, stage by stage, about their materials' effectiveness. There is still plenty of room for debate and experimentation about the means of doing this. Schools Council practice, gradually developing, is to assign a part- or full-time evaluator to each development team; this is a person who is envisaged as being sympathetic to, but independent of, the development team members. His sympathy is needed to enable him fully to understand what the team is aiming at; his independence to permit him to challenge the formulation of objectives, and to demand that they be refined (or abandoned) with a view to achieving ultimately, as we noted earlier, some formulation of the project's purposes which are amendable to research evaluation."

Because no single model for curriculum development has been adopted by the Council projects, evaluation design has been idiosyncratic, reflecting the particular style of the project to which it was attached. The Council is shortly to publish twelve case studies of evaluation (2) selected to represent different points on the continuum of research strategy and a range of subject disciplines. The focus in these case studies is on what was looked for rather than what was found. As projects come to an end it is intended that evaluator's reports on their findings should be published to complete the picture. These reports are intended to serve a double function in informing decision makers at all levels about the characteristics of projects and at the same time playing a part in the learning processes of the Council.

Evidence on the merit or otherwise of strategies of curriculum development ranging from intrinsic value to potential for dissemination is required by the Council committees whose function is to decide on what work is undertaken, and on the manner in which it should be done. An evaluator's report is a report on the stewardship of the project and is admissible evidence for or against future projects of a similar operational style. The sum of available expertise which can be brought to bear on the problems of evaluation increases as a consequence of the publication of reports on evaluation, and hopefully provides material for teachers designed to encourage growth in their awareness of the need for and the techniques of evaluation which the NFER (3) report suggested was lacking.

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(1) Banks, L.J. (1969) Curriculum Development in Britain 1963-68. Journal of Curriculum Studies, Vol. 1, No. 3 November 1969. p. 255 and 256. (Mr. Banks was a Curriculum Developments Projects Officer with Schools Council from 1964 to 1968).

(2) Evaluation of Curriculum Development: 12 Case Studies. 1973 Macmillan Education for the Schools Council.

(3) Op. Cit.

Two areas of possible future research based on planned innovation suggest themselves. The first of these is a study of the strategies for dissemination adopted by curriculum research and development projects. To date only one Schools Council project is attempting this (1), and it will be necessary to conduct a number of such studies in order to obtain evidence of what dissemination strategies are successful in the context of the decentralised education system of England and Wales. This present attempt at evaluating the process of dissemination will occupy the later stages of the project's time span, but it would probably be generally more useful to mount such exercises some time after the completion projects, and the publication of their materials. This is the case with the investigation (2) of the dissemination of the Nuffield Foundation (completed) science projects which is taking place at present supported by a grant from the Social Sciences Research Council.

The second area of possible future research is the summative evaluation of curriculum research and development projects some time after their completion. To date the Council has not seen this kind of activity as a part of its role, but in the near future it is likely that the teaching profession, faced with the variety of approaches from which it may choose, will ask for evidence on which choices may be based. The Council has recently received a proposal for such an exercise applied to Moral Education. No doubt as major projects reach fruition in publication, and their materials and ideas are adopted by significant numbers of schools, such proposals will be received with increasing frequency.

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(1) Schools Council: History Georgraphy and Social Science 8 to 13. Director Prof. W.A.L. Blyth. School of Education. Liverpool University 1971-74.

(2) Curriculum Diffusion Research Project. Directed by Dr. P.J. Kelly at the Centre for Science Education, Chelsea College of Science and Technology. 1971-74.

APPENDIX

Funds Committed by the Council under Various Subject Areas

November 1972

Subject	Primary (5-11yrs)	Middle (8-13yrs)	Secondary (11-18yrs)	Whole Range	Total
CREATIVE STUDIES	56,600	40,650	172,164	-	269,414
ENGLISH	115,697	94,706	80,517	311,059	601,979
ENVIRONMENT	70,370	-	46,000	-	116,370
EXAMINATIONS	-	-	753,675	-	753,675
GEOGRAPHY	-	43,000	125,148	-	168,148
HISTORY	-	43,000	78,000	-	121,000
INTER-RELATED STUDIES	163,743	83,770	162,204	43,050	452,767
LANGUAGES	97,250	-	881,395	-	978,645
MATHEMATICS	24,024	-	342,157	83,600	449,781
MULTI-RACIAL EDUCATION	-	-	-	136,500	136,500
ORGANISATION AND RESOURCES	-	-	46,491	2,963	49,454
RELIGIOUS EDUCATION	75,150	60,036	106,948	-	242,134
SCHOOL, HOME AND COMMUNITY	-	-	11,662	52,533	64,195
SCIENCE	142,900	-	502,352	47,000	692,252
SOCIAL AND GENERAL STUDIES	-	53,610	307,783	-	361,393
WELSH	176,754	37,850	160,490	-	375,094
OTHERS	-	-	7,826	7,100	14,926
TOTALS	922,488	456,622	3,784,812	683,805	5,847,727

Case study 3

COMPREHENSIVE SCHOOLS : RESEARCH STRATEGY AND ITS LINKS WITH EDUCATIONAL POLICY

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National Board of Education
Stockholm

1. The problem of democratization in education

This paper deals with the efforts made in connection with the introduction of a uniform compulsory school system in Sweden to establish co-operation between educational policy and educational research. During the 1940s it was above all those in charge of education policy who raised the question, supported however by a series of initiatives by the teachers' associations in the form of letters to the government demanding a review and reform of elementary schooling. These letters in turn were based on experience derived from experimental teaching activities in Gotheburg, Helsingborg and elsewhere.

Thus the problem of the inadequacy of the existing school system had been defined by both politicians and grassroots workers, but it was the attention given to the matter by politicians that was decisive, leading as it did to the appointment of government committees to investigate these matters.

A Committee of Inquiry was set up in 1940 and continued its work until 1947. It was a committee of experts chaired by the then Minister of Education, Gösta Bagge, of the Conservative Party.

The 1940 Committee's report and proposals were thus of great importance as basic material for later work, which eventually led to the establishment of the present comprehensive school. The 1940 Committee proposed an eight-year school, but this did not come into being. From the very beginning of the work of the Committee of Inquiry, it was obvious that the work of investigation would be taken over by a political commission. This commission was appointed in 1946, that is to say while the Committee of Inquiry was still sitting.

The 1946 School Commission, the forerunner of the experimental phase during the 1950s, was in some respects a direct continuation of the 1940 Committee of Inquiry. In other respects it deviated radically from the theories and evaluations of the Committee of Inquiry. Times changed quickly, too. The Second World War had come to an end. Germany, whose schools had long been the prototype of Swedish school organisation, was completely defeated. The old European type of organisation, with a distinct boundary between the compulsory school and the academic school was no longer the obvious model in the effort to satisfy the growing demand for school attendance and education.

In Sweden the idea of a comprehensive school was by no means a new one. But it was not until the 1946 School Commission that the comprehensive school idea became accepted in the Swedish debate on education. The School Commission, like the Committee of Inquiry, found an extension of compulsory school attendance justified, but raised the school-leaving age to sixteen years, not fifteen, thus introducing nine years' attendance. The definitive split between the two committees, however, was mainly in the differentiation model arrived at. The linking models proposed by the 1940 Committee, 4 + 4 (majority) and 6 + 2 (minority) were rejected. Instead, the School Commission proposed 8 + 1. The lower stage, classes 1 to 6, was to be common to all. In the seventh and eighth classes, most of the curriculum and timetable was to be common to all, but scope was to be allowed for organisational differentiation in the form of free choice of subjects. Streaming was not to begin until class 9.

The 1946 School Commission, unlike the 1940 Committee of Inquiry, was a political committee. The chairman was Tage Erlander, then Minister of Education. When he became Prime Minister in 1946, the chairmanship passed to Josef Weine, the new Minister. The

School Commission consisted of representatives of the four major political parties in about the same proportion as the size of the parties in Parliament, and a non-political member to represent the interests of parents. Many experts were attached to the School Commission and were assigned to ten subcommittees to deal with special problems.

In 1948 the School Commission published its first report, with proposals for guiding principles in the development of the Swedish educational system, but it continued working for a few more years on, among other things, Schools of Education. The 1946 School Commission criticised sharply the traditional Swedish school and its methods of work; the school was said to have inherited 'a burdensome legacy from the school of the Middle Ages and the school for civil servants and the like'. The School Commission summarised the task of the school: welfare, study training, skill in languages and mathematics, general knowledge, aesthetic training, practical training, vocational guidance, health training, social training, and character training. To realise these aims, the character of the school would have to be altered: class instruction and the dominant 'question-and-answer' method would have to be replaced by methods of work designed to permit more pupil activity and individual work.

Referring to the content of instruction, the School Commission proposed

- that instruction in Swedish should be increased
- that English should be studied by all pupils as from the fifth class
- that the so-called practical subjects should be given a stronger emphasis
- that a special subject, civics, should be devoted to the systematic study of the surrounding world, throughout the whole length of schooling.
- that literature, history, geography, biology, physics and chemistry, as well as aesthetic subjects, should be given more scope.

This, the School Commission maintained, would need a compulsory nine-year state supported municipal comprehensive school organised in three-year stages: Lower Level, Middle Level and Upper Level. The top class, it was proposed, should be organised in three streams: one pre-vocational stream (9y), one general stream (9a) and one academic stream (9g). This new school was to replace the elementary school, the old continuation school, the higher elementary school, municipal and state junior secondary schools (general and practical) and the girls' secondary school.

This proposed reform was presented to Parliament in 1950. In the special committee appointed to prepare this important matter there were differences of opinion which led to a compromise which was later accepted by Parliament. According to this compromise, the new nine-year school was to replace the elementary school and the old continuation school, the higher elementary school and the general junior modern secondary school. Girls' schools and the practical junior secondary school were therefore excepted.

That the solution was a compromise was further stressed by the emphasis laid on the experimental work which was to precede and prepare the establishment of the new school. In the comments on the proposals preceding the 1950 Bill, teachers had expressed anxiety about the capacity of the new school to perform its task satisfactorily. The implications of the Parliamentary decision were also discussed.

Those supporting the resolution held the view that nine-year compulsory attendance was a fact, and that the experimental work referred only to the structure of the nine-year school. The opponents claimed that the introduction of the nine-year school was dependent on the results of the experimental schools. Later, in 1956 and 1957, Parliament made statements according to which the former interpretation was the correct one. Thus, the nine-year compulsory school was decided on in principle.

As we shall presently see, the 1940 Committee of Inquiry had already enlisted the services of professors of pedagogics and psychology to elucidate the most important problem in this reform, viz. the question of differentiation. The 1946 School Commission and the majority of education committees subsequently appointed did likewise. This gave rise to increasing co-operation between those responsible for school policy and researchers at central level.

Summing up we may say: the definition of problems concerning the development of the school system was definitively made by the school policy makers and not by teachers, administrators or researchers. This definition depended to a great extent on the way in which teachers and school administrators had experienced and reported educational problems during the immediately preceding period. To begin with, practically no clear research strategy existed. The form and content of research measures were entirely defined by the researchers.

2. What research was done ?

A very important step was taken by the government committees in turning to the country's professors of pedagogics for their views on how the most important question, that of differentiation should be resolved. The professors responded with a publication setting out their views as to what had been demonstrated by educational research and what conclusions one was entitled to draw from it (1). Their answers as to when and how pupils should be hived off into separate courses of study were perhaps not particularly interesting, but the actual idea of taking research and decisions of education policy into consideration was accepted and gained a firm footing.

Subsequent committees have followed this pattern and have put more specific questions to the researchers they have consulted.

The 1946 School Commission, which was responsible for the basic design of the reform, rejected, in its 1948 proposals, the then prevailing division of studies into "theoretical" and "practical" types, on the evidence provided by, among others, investigations by John Elmgren (2). He tested a representative sample of students aged eleven to fifteen years for their theoretical and practical aptitude, to determine whether one aspect tended to predominate. This was not the case. 56% of the students were equally gifted theoretically and practically, while 22% were mainly theoretically gifted and the other 22% were mainly practically gifted. Elmgren concluded that what is called practical aptitude is of a much more complicated structure than theoretical aptitude (in the sense of general intelligence.

In 1960 Kjell Härnqvist, using a slightly different approach, made a similar study for the 1957 School Committee (3). For the same age range, Härnqvist studied the correlation between intra-individual differences and inter-individual differences, in both aptitude factors and interest. He found that there were differences within an individual as well as between individuals and in his calculations he expressed statistically the correlation between these two kinds of difference. The intra-individual variance in aptitude and interests on the whole covered 60% of the inter-individual variance.

One of the consequences of the new school organization was that it required larger school districts, so that pupils often had to be driven from their home areas to central schools. The role of school transportation became an important issue. Surveys were made, e.g., by Tore Osterberg (4), Hans Petersson (5) and [illegible]lund (6) to see whether the pupils' school satisfaction and achievement were influenced by long journeys to and from school. The surveys did not reveal any negative influence in either respect.

The question of [illegible]rility between the two forms of school (the traditional junior secondary school and the upper level of the experimental school) became a practical one when the first pupils in the experimental schools finished the eighth class and had to compete with those in the secondary school for entrance into the gymnasium. In order to determine the comparability of the marks awarded in the two schools, tests were made to measure the knowledge of Swedish,

English, German, and mathematics in class 8 of the experimental school and form 4 of the five-year junior secondary school. Only experimental school pupils who had chosen two foreign languages were tested. Pupils at the junior secondary schools had consistently better results than experimental-school pupils - often the margin was so wide that the difference was statistically significant. The tests were repeated the following year, when the results in 9g were compared with those in the corresponding form of the junior secondary school. There were still differences in the same direction, but somewhat smaller.

The studies covered the whole of the year groups concerned in the country. The ages and sexes of the students were kep constant, socio-economic group membership was checked to a certain extent, and in some tests also the students' intelligence.

The results of these tests gave rise to a lively debate on the merits of the experimental school versus the junior secondary school. On the one hand it was claimed that the tests had proved the superiority of the junior secondary school model. The opposite party maintained that the supply of teachers, the pupils and other factors were not comparable, and denied the superiority of the junior secondary school model. The great drift of theoretically inclined pupils from the experimental schools to the junior secondary school was stressed. But the most important point in the debate was how the new school was to be judged. Thus the discussion became, in reality, a debate on the aims of the new school. These studies were made by the Experimental Department of the National Board of Education, and were annually reported to the government and by the government to parliament.

The years 1951-55 were characterised most by comparisons between the junior secondary school and the experimental nine-year comprehensive school. It was mainly the situation of the so-called theoretically gifted students in the two types of school that were to be compared. For various reasons, chiefly statements by parliament, the comparisons were later concerned with the streamed and unstreamed upper departments of the comprehensive school. Thus the problem referred to the seventh, eighth and ninth grades of the new school, and even there not only the so-called theoretically inclined but also the practically gifted. In the streamed system the latter were usually found in the so-called "negatively differentiated" classes. It became a "within-school" comparison instead of the earlier "between-school" comparison.

Among comparative studies made during this period may be mentioned Nils-Eric Svensson's (7) studies on student achievement in various differentiation environments in grades four to nine. In the spring of 1955 the results of standardized scholastic tests and measurements of intelligence were published. The tests referred to all pupils in grade 4 of the elementary schools of Stockholm, altogether about 11,000 pupils in 348 classes. After grade 4, the whole population of pupils was divided according to marks and residential area into three main groups. The first of these groups comprised the comprehensive school classes which, in principle, were integrated up to the last year. The second consisted of the pupils who, after the fourth or sixth grade, had moved to junior secondary or girls' secondary schools - that is to say a positively differentiated group. The third group was made up of the elementary school pupils left after the others had moved to other schools: this was therefore a negatively differentiated group. Intelligence and other feasible secondary effects were checked statistically.

The results were, generally speaking, the same for the classes in the different groups. A slight superiority in the positively differentiated classes during the early phases of the investigation was neutralized towards the end. The results thus were not in favour of an early organizational differentiation.

Svensson's investigations, however, were only secondarily concerned with the question of early or late organisational differentiation, since most of the upper level classes included were organisationally differentiated according to choice of subjects. The comparisons were, as Svensson himself stressed, concerned with the differentiation environment as a whole, where the

presence in the school of both positively and negatively selected classes was one of the factors. The junior secondary school environment was thus - for the knowledge and aptitude relevant to the investigations - somewhat superior in the early grades, but this superiority declined with the years, and finally disappeared altogether. Svensson's data were later reanalyzed by Dahllöf (8), who after further checking argued that this conclusion could not be drawn.

In the upper level of the experimental school, Sven Jansson (9) made some comparisons between pupils in integrated classes and classes with pupils differentiated according to choice of subjects. The end-of-term marks in the integrated classes and the results of some tests were slightly inferior to those in the differentiated classes.

The same problem was elucidated in an investigation by Gunnar Marksjö (10), who, for the eighth year, compared marks and results in achievement tests in (a) integrated classes (b) classes differentiated according to choice of subjects, and (c) parallel school classes. The types a and b were experimental school classes and type c the old school classes. With two exceptions out of twenty-four the differences were insignificant, and even those two could not be related to the type of differentiation.

The question of the homogeneity and heterogeneity of classes was often associated with the question of size of class. If classes were heterogeneous, the teachers claimed, they should be small, while homogeneous classes could be somewhat larger. In a study by Marklund (11) comprising about 3,600 pupils in a total of 189 sixth grade classes, students' knowledge of and skills in school subjects were studied with objective tests. Comparisons were made between results in large and small classes with homogeneity kept constant. Large and small classes had the same results. In the same way, the results attained in homogeneous and heterogeneous classes, with size of class kept constant, were compared. Here, too, the results were the same in all essentials. The students' intelligence was checked consistently by means of analysis of covariance The criteria of homogeneity were standard deviation of intelligence and test results.

This and other studies of the importance of class homogeneity were of interest in the comparisons of streamed and unstreamed classes in the new school. The streamed classes represented the homogeneous, the unstreamed the heterogeneous classes. At the State Experimental School at Linköping (Malmqvist, 12), the four seventh grade classes were organized so that two were unstreamed (heterogeneous), one positively homogeneous and one negatively homogeneous. The criteria of homogeneity were the students' intelligence and the results of objective tests of knowledge in class 6. The classes were constructed so that the two heterogeneous classes together were "equivalent" to the two others together. The four classes had the same groups of teachers. In the seventh grade the integrated classes had somewhat better results than the classes differentiated according to subjects, and in the eighth grade the results were the same.

In a similar experimental study made at Växjö, Bertil Carlsson (13) arrived at somewhat different results. In the seventh class the theoretically gifted pupils achieved better results in classes differentiated according to choice of subjects than pupils in integrated classes. For the practically biased pupils in grade 7 and for both practically and theoretically biased pupils in grade 8, no marked differences were observed.

The results of these studies were restricted to pupils' knowledge as expressed in tests, marks and examinations. In other investigations endeavours were made to elucidate other effects on pupils. Ingva Johanneson (14) made a study of the pupils' social development in various differentiation environments. He found differences between elementary schools and junior secondary schools in respect of pupils' attitudes to their teachers and school-fellows and to the school situation as a whole. Elementary school pupils were more positive in their attitude to the teachers, junior secondary school pupils more positive in their attitude to school-fellows and the school situation.

David Magnusson (15) compared pupils' assessments of themselves in different types of school. This assessment was performed in such a way that each pupil had to indicate how he thought he would be ranked by his classmates. The boys' assessments of themselves were, on average, lower in secondary and elementary schools than in the experimental comprehensive schools. The girls' self-assessments were lower in the secondary school than in the other two schools

Jansson, in the investigation mentioned above, also made comparisons of pupils' feelings of wellbeing at school, their choice of schoolfriends, and their choice of subjects in integrated upper levelclasses and in classes differentiated according to choice of subjects. Some differences were observed and interpreted in favour of the latter. Jansson also asked the teachers their opinions about differentiation. They all preferred classes differentiated according to choice of subjects to integrated classes.

The discussion, especially among teachers, was very vivid during the late 1950s. On the whole primary teachers supported the comprehensive school experiments. The secondary academic school teachers, however, mostly opposed to it. In a larger study made on behalf of the National Board of Education (Sven-Eric Henrisson, 16), 413 teachers of different categories were asked to make the same choices as in Jansson's work. These 413 teachers were in fact all the secondary school teachers that at this time had had reasonable experience of the new, as well as the old, school systems. In one respect the result was the same as in Jansson's study: the teachers considered that the integrated classes were more of a burden than classes differentiated according to choice of subject. Otherwise the National Board of Education study gave a much subtler picture of teachers' experiences and views on the advantages and disadvantages of the two types of class in different subjects and at varying levels of intelligence. 133 teachers said that they preferred the integrated upper department, and 107 preferred the organizationally differentiated; eighty-nine considered that they were equal and eighty-four did not answer.

An investigation of intending teachers' attitudes to their coming job in the new school with integrated groups and heterogeneous classes was also made by Marklund (17). Most of the teachers, especially the secondary school teachers, were negative to the new school, and preferred the traditional school system. The teachers were also given a test of their knowledge of the new school, its goals, organization and methods. The results of this test were positively correlated with the attitudes: the greater the knowledge of the new school, the more positive attitudes. The ignorant teachers were also the negative teachers.

In conjunction with the above-mentioned Växjö investigation, pupils were also compared in respect of their attitude to school (Birgitta Rudberg, 18). The wellbeing of the theoretically gifted pupils was at first greater in the integrated classes, but this difference grew less in the eighth class. Among the more practically inclined pupils, whose feeling of wellbeing at school declined generally in the eighth year, there was no difference between integrated and differentiated classes. The pupils in the integrated classes, in which there were alternative course groups, showed greater interest in optional subjects from the spring term in the seventh class.

Among other comparative studies within the framework of the programme of reform may be mentioned Urban Dahllöf's (19) studies of the curricula in Swedish and mathematics in the elementary and junior secondary schools. The study included comparisons between the achievements of thirteen-year-old students in both types of school and retention of knowledge by two groups of twenty-three-year-olds, one with an elementary school and the other with a junior secondary school education.

On behalf of the 1960 Senior Secondary School Committee, Dahllöf (20) investigated the demands made on secondary education by the bodies receiving the students. Representatives of the universities, industry, commerce and the administration were asked to say what demands they made on education in respect of both level and content, and how far the students satisfied these demands. The comparisons were not made only between what representatives of the universities considered in relation to representatives of the economy and administration; in addition the general situation of non-science subjects was compared with that of the sciences. One section of the study was concerned with the position of Latin in the senior secondary school.

Kjel Härnqvist and Ake Grahn (21) studied the attitude of students to their school attendance. Forms of study and choice of subject were related to different groups of students and different streams in the senior secondary school.

For the training of teachers for the upper (secondary) level of the comprehensive school and the senior secondary school, a series of studies was made by Inga Elgqvist (22), on the subject - theoretical teacher training provided by the universities. This series was the first phase of a study of congruence, a comparison of the contents of university and school courses. The fact that the scope of what is called "subject" had developed differently in school and university studies had been found to be a problem. New school subjects appeared, often by combining old ones. At the universities a continuous differentiation of branches of science was going on. Teacher training that could embrace satisfactorily the essential parts of what a trainee would later have to teach was liable to become much longer. Take the school subject biology, for example; it demanded of the teacher a knowledge of zoology, physiology, hygiene, genetics, botany and limnology, to mention a few university subjects. Inga Elgqvist's findings were published in five reports to the 1960 Teacher Training Committee. The first gave an account of the design and purpose of the investigation. The second reported teacher training for the school subjects Swedish, English, German and French. Part Three was concerned with mathematics, physics, chemistry and biology, while the fourth part dealt with history, civics (social sciences), geography and religion. The correspondence between examination courses at the universities and subjects taught at school was dealt with. The distribution of instruction in different courses up to master of arts level was described. The obligatory instruction time was described in terms of lecturing, group work, seminars and practical work, and each of the universities of Uppsala, Lund, Göteborg and Stockholm was reported separately. Part five described decentralised university courses at places other than university towns.

The five reports by Inga Elgqvist gave the first complete picture of the educational and organizational conditions of the subject - theoretical teacher training given by the universities. This survey has made it possible for the authorities, through their experts, to measure the congruence between university and school courses. A summary of these comparisons was made by Per-Erik Brolin (23).

The educational surveys of the experimental period, only a few of which have been mentioned here, can be summarized as follows:

- the main topic of interest was the question of differentiation at lower secondary level,
- the surveys carried out covered social and economic as well as educational matters,
- most of the surveys were commissioned by Government committees (references 1, 2, 3, 5, 14, 15, 17, 20, 21, 22, 23) or by the National Board of Education (10, 12, 16),
- research was also initiated by individual researchers, independent organizations and institutions (4, 6, 7, 8, 9, 11, 13, 18, 19), often in close consultation with committees or the National Board of Education.

3. Outcomes

The research findings have been reported in the usual way and interpreted by the educational

researchers themselves. They have also been forwarded to politicians and teachers - implementers of different kinds. In this way the Government committees have quite often assumed responsibility for the further dissemination and application of research findings, with the policy makers themselves interpreting and evaluating the results reported by the researchers. This has made it particularly important, insofar as scientific standards permit, for results to be presented in a form which can be comprehended by the layman. Only by means of such a popularization has it been possible for research to become rooted in co-operation between school researchers and educational policy makers.

All the central educational research reports compiled during the 1950s and 1960s have been presented to the National Board of Education. In a number of cases researchers have also been summoned before Parliamentary committees to present their findings. Not all of these findings have been taken into account by the policy makers, but it has become established practice for educational research reports to be touched on in the course of such decisions.

The following brief remarks can be offered concerning research findings:

- they did not supply unambiguous answers to the questions that had been asked in the debate on differentiation,
- there was no appreciable difference between the results of so-called heterogeneous classes and those of so-called homogeneous classes,
- in this way the results served to dispel a number of preconceived opinions concerning the effects of an organizational change,
- the results were hotly debated not only by politicians and researchers but also by teachers, administrators and parents, so that in this way they helped to clarify a conflict of values,
- the results helped to demonstrate social and economic consequences over and above the educational implications,
- contacts were established between educational policy and educational research,
- two principal types of bodies formed links in this process, viz the Government committees and the National Board of Education.

4. How are Research Results Transmitted to Teachers ?

There are three principal ways whereby research results are transmitted to school practitioners.

The first of these is through the observation of research results in the construction of the curricula or other guidelines which are centrally compiled for the support of teaching in the new school system.

The second way is through the observation of research results in the basic and further training of teachers. Efforts in this direction have been made ever since the mid-1950s, with varying degrees of success.

The third way is through the appointment by central and regional education authorities together with the schools of education of persons whose task is to disseminate the new curricula and the results arrived at by educational research. Experts have been engaged among other things for the construction of further training material for teachers. To this must be added the widespread dissemination of results through reports from the actual projects.

The effectiveness or otherwise of these measures for the dissemination of research and

curricular development can be seen e.g. from the reports annually submitted to the National Board of Education by school consultants together with central and regional inspectors.

The most important conclusions concerning the utilization of educational research findings in schools are as follows:

- research cannot be isolated from broadly based development work forming a sequel to the research already completed,
- specially earmarked funds are needed for this development work,
- planning of development work must be co-ordinated with research planning and
- development work should concentrate on three main sectors, viz curriculum development, teaching aid development and teacher education.

5. Importance of Research

The research and development work which has been briefly described here has presented a long series of difficult problems, some of which are discussed below.

First and foremost it should be made quite clear that research findings have not constituted the primary basis of school policy. Social and economic considerations have been decisive in determining the shape of the new school.

Research has not been altogether devoid of importance, however. The arguments used in the debate on school policy have drawn heavily on the findings of educational research.

The true effects of educational research are greater than is generally supposed. There can be no doubt that commitment to educational research and the linking up of that research with purpose-oriented development work have yielded valuable results. Where teaching materials are concerned it is now general practice for the pupil's study material to be combined with teacher's guides, work books, diagnostic materials etc. to form systems of the kind compiled in study material projects. The question nonetheless arises whether such changes or other effects such as new syllabi, new pupil groupings, new prototypes, etc. are in fact felt to be improvements or whether they are merely experienced as disruptions of school work. School problems cannot normally be "solved" by results of this kind. They only lead to subsidiary effects and support measures, the effect of which is often highly dependent on the overall results at which one aims. If the development of new means and methods leads to new demands on teacher collaboration and new demands on pupil groupings (e.g. large group, small groups and individual work) and if at the same time the teachers are opposed to these things, one is hard put to it to see the results as being "useful". Perhaps the complaints sometimes heard regarding the impractibility of research and development results are due to mutually irreconcilable demands having been made. At all events, the experiences of the past few years have probably led to something of a reappraisal of the attainability of prompt and unequivocal results in educational research.

One difficulty lies in the impossible demands which have been made by failing to define the problems which research and development are expected to solve. Thus the demands intermittently voiced for a solution of "the discipline problem" by means of research are as preposterous as the idea of using research to eliminate road accidents, disease or unemployment.

Preparedness for and acceptance of change is a prime condition of the utilization of educational research and development work. Decision makers and recipients, insofar as they are not the same person or do not belong to the same group, may arrive at different evaluations here. Thus the decision makers may feel that teaching materials which take the place of teachers

lead to better goal achievement, while the recipient-cum-teacher, seeing his security of employment in jeopardy, has second thoughts. Goal conflicts of this nature call for an allround investigation and assessment of both long-term and short-term effects. Teachers should have a long-term interest in preserving what in the true sense of the term are professional teacher tasks and in relinquishing other tasks which can easily be taken over by assistant personnel or indeed by teaching materials.

Research and development work has a long-term aim. Short-term requirements are normally catered for by direct administrative measures. This is another reason why research and development activities have sometimes been considered less "useful". The Swedish mathematics projects have contributed towards the design of the structure of mathematics teaching according to the 1969 comprehensive school syllabus. The effects of this are of a long-term nature. Other projects have made similar contributions to the design of comprehensive school courses e.g. in general natural science and social subjects. Of course the direct "usefulness" of research can always be questioned, but this is a secondary question. Instead one should inquire concerning the long-term implications to pupils and teachers. Results are generally indirect. The direct effects, e.g. new teaching aids, evaluation instruments, forms of organization etc., occur as applications of the knowledge furnished by research.

Another reason for questioning the usefulness of educational research is that the results and effects are often not obvious but concealed in changes concerning sectors which one does not automatically connect with the research and development activities themselves. Educational research has furnished knowledge which has helped to destroy a view of mankind founded on prejudice and convention. Sexual and racial discrimination are elucidated, our knowledge of the effect of different social and economic backgrounds has been broadened. More light is shed on phenomena such as criminality and mental illness. Research makes social problems such as poverty, violence and maladjustment something more than clichés or imputed traits of character. Closer attention is brought to bear on the problems of urbanization, the design of working environments, the importance of partnership and consultation, the reasons for protests by teachers and pupils, alienation and defeatism and so forth. The results of educational research are not lacking in importance on a level with those of other forms of behavioural research, even if that importance is not apparent at first sight.

With more reasonable demands concerning the visible effects of educational research, one comes to realize that such effects are often manifested as small, modest pieces of knowledge in a large and complex problem situation. One should therefore question not so much the usefulness of individual projects as the usefulness of research combined with other measures. The collective usefulness of research can thus be expected to be greater than the sum total of isolated efforts. Cumulative work, e.g. follow-up projects such as those conducted in Gothenburg and Orebro, provides valuable knowledge of the situation of Swedish youth. It has been possible here to examine in detail the problems of social bias in recruitment for different kinds of education and occupations and to investigate the process of attitude formation. Another example of cumulative effect is to be found in language teaching. Research has made valuable contributions to the debate on language teaching in recent years. This has resulted e.g. in the National Board's new standardized achievement tests in modern languages for upper secondary school being made to include much more grammatical structure than was previously the case. The importance of this to the teaching of languages in schools should not be underrated in view, among other things, of the influence of such change on the design of teaching materials. Another example of cumulative measures leading to results is provided by the so-called new mathematics. Research projects, curricular projects, inter-Scandinavian co-ordination projects and in-service teacher training projects have here collaborated with a total effect which is probably unparallelled anywhere else in the world. It is fair to say that co-ordination has often been lacking. This is one of the sectors where the National Board of Education has explored new ground in recent years, among other things in its budget estimates by rearranging the development appropriation into new programmes as they are termed, in which research and development work are grouped in one and the same programme.

Another problem altogether concerns the extent to which the results are utilized. It is by no means unknown for research and development results to come off second best in the frequently bitter struggle between rival interests and values in the field of schools and education. Knowledge is not used, people act as though it did not exist. Time and time again educational research has shown that under-achievement in schools is due more to methods and external factors generally than to lack of aptitude on the part of the pupils themselves. Yet teaching still goes on as if the latter applied. The pupils' aptitudes and results are still assessed according to quite one-sided intellectual criteria although the importance of other bases of assessment has often been demonstrated.

Educational research and development is not primarily what is termed discipline research but rather policy research. One should not neglect the second half of the definition, "research". This implies that the solution of problems is not directly aimed at administrative measures. When practical problems are made the subject of research they must be redefined as discipline problems. When the results are then produced, the problems are "redefined" into practical and administrative questions. This may appear circuitous, but the focus on fundamental knowledge often makes it a short cut. In other words, the most practical proposition often turns out to be a good theory.

The "usefulness" of research and development can be summarized as follows:

- it is greater than its detractors sometimes allege,
- its effects are long-term rather than short-term,
- they are more indirect than direct, often not immediately apparent, and
- they should be seen as parts of cumulative development efforts.

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Case study 4

THE HUMANITIES CURRICULUM PROJECT: A CASE STUDY

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Since its inception in 1964 the Schools Council has sponsored over a hundred projects, most of which have been devoted to curriculum development. One of the most striking aspects of these projects, at least to foreign visitors, is that they are all different. The difference lies not only in subject area or age and ability range, but also in the design, methodology and strategy. There is, in fact, no such thing as 'The Schools Council Model'.

It is therefore far from easy to illustrate the work of the Council by a case study of any one project. However, once this point has been made it is possible to take one project and to follow it through its activities, indicating en route where it adopts and where it diverges from the general trends revealed in other projects. The Humanities Curriculum Project has been chosen for this purpose because although it illustrates much that is common to all projects it also has many characteristics specifically its own.

Origins of the Project

In the 1960's one of the most pressing concerns in English education was the raising of the schools leaving age to 16 in 1970 (1). The teaching profession was presented with the problem of how to use the longer span of compulsory education to best advantage. Many adolescents were, in fact, already staying on voluntarily at school after age 15 and most of these had fairly specific aims in the form of external examinations. In these circumstances it was the average and below average pupil, who tended to leave school at the earliest possible moment, who presented the greatest challenge. A Committee, chaired by Sir John Newsom, considered this issue and in its Report (1963) recommended a particular approach to the teaching of the humanities (2): 'To set a class a carefully defined problem in human conduct and human relations into which boys and girls can project themselves and work out the various implications of different courses of action - this is realistic teaching.' In 1965 the Schools Council published Working Paper No. 2 on the Young School Leaver. This Report summarised the needs of the pupils in the humanities:

'The problem is to give every man some access to a complex cultural inheritance, some hold on his personal life and on his relationships with the various communities to which he belongs, some extension of his understanding of, and sensitivity towards, other human beings. The aim is to forward understanding, discrimination, and judgement in the human field.'
The Schools Council Committee which recommended publication of this Report also approved in principle the idea of a development project based on it, and outlined the proposed work as follows:
'The basic aim of the development project will be to devise and evaluate curriculum materials which will extend the range of choice available to teachers concerned with children of average and below average ability, particularly in the 14-16 years age range. It is proposed to develop material on the basis of 'areas of enquiry', i.e., themes which will overrun subject boundaries and raise issues in English literature, history, geography, religious education and the social sciences.'

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(1) Subsequently deferred to 1973

(2) The term 'humanities' in England and Wales refers to those subject areas which are known as 'Social Studies' in many other countries, including the United States.

It was against this background that the Humanities Curriculum Project (known from this point as HCP) came into existence. Discussions took place between the Council staff and Mr. Lawrence Stenhouse, a possible Director of the project, Principal Lecturer at a College of Education, who had both school and University teaching experience. The Nuffield Foundation, which had already sponsored a number of curriculum projects, expressed an interest and agreed to share the cost of the HCP equally with the Schools Council.

There are several points in this outline which need to be stressed. The project came into existence to meet a known and perceived need. Both Ministry and Council Reports paved the way by indicating the nature of the problem and pointing to possible solutions. The Director came from outside the Schools Council. This is common Council practice. The brief given to the Director included the phrase 'extend the range of choice available to teachers'. The project was thus not intended to be prescriptive, nor could it be in the English context. Each school and each teacher has a considerable degree of autonomy and the philosophy of the Schools Council is geared to preserving this. It attempts to extend the range of choice and to promote professional growth but it cannot, nor does it wish to, lay down a common curriculum. Another important point is that although the Director had a general brief and actual details of method and procedure were left to him and his team. Project teams in England have an autonomy not unlike that enjoyed by schools.

The Project Team

Mr. Stenhouse was appointed Director of the project in summer 1967. One of his first tasks was to build up a project team. The number of members in the team varied according to needs at particular times. Initially these were six people, all except one of whom had had experience of teaching in schools. The exception was a woman with special experience in publishing. Five of the team were 'seconded' to the project. This term is not used in Europe and needs explanation. It means that the staff were allowed to leave their teaching posts in schools, colleges or universities for an agreed period of time to work on the project but their posts were kept open so that they could subsequently return to them. This is an important feature of Schools Council projects. It has two main advantages. First, because development work is largely undertaken by serving teachers, it is more likely to be geared to classroom needs. Secondly, the direct involvement of teachers in the curriculum development process helps to bridge the well-known gap between teacher and researchers.

The chief concern of the team in the first year was the preparation of materials and the evolution of a teaching strategy, both of which are discussed later (see page 4). The first evaluator was appointed to the project in 1968 and the subsequent appointment of other evaluators brought the team to its maximum of ten members in 1970. This is a larger number of staff than is normally the case in Council projects but the chief reason (1) was the need for a strong evaluation team (see page 6). The project also employed varying numbers of clerical and secretarial support staff.

Administration: The Role of the Schools Council as Sponsoring Body

At every stage in the life of the project all decisions involving additional finance were made by the appropriate Council Committee. Each of these Committees has a majority of serving teachers. The main stages of the project in terms of Committee decisions were:

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(1) The project employed a research officer based at the British Film Institute, because of the importance attached to the use of film. This was the first appointment of its kind in a Schools Council Project.

(1) In November 1966 the General Purposes Committee approved the development project in principle and authorised the staff to enter into discussion accordingly. The original duration of the project was three years, the cost up to £40,000 per year (or £20,000 if the Nuffield Foundation agreed to share the cost - as subsequently happened).

(2) In March 1968 an additional grant of £30,000 was made by Programme Committee for the provision of film extracts and video tape recordings.

(3) In November 1968 a proposal to extend the project for a further two years was approved by Programme Committee with a ceiling grant of £80,000.

Throughout its life the project was in continuous contact with the Council. This contact was effected in four main ways :

(1) All day-to-day financial details, such as purchase of equipment and staff salaries, were dealt with by the Council Finance team.

(2) An officer of the Council known at that time as 'project officer' was appointed to liaise continuously with the project.

(3) A Consultative Committee for the project was set up. It included a representative of the appropriate Council Steering Committee.

(4) Arrangements for publications were made through the Council Publishing Manager.

These are common to all Council Development projects. The purpose is to maintain a reasonable balance between the autonomy of the project and need for accountability to the sponsoring body. The project officer for example, knew of all the developments and was available for advice and help, but he had no mandatory power. Similarly the Consultative Committee, which met three or four times each year, was not a 'Steering Committee'. It acted in a purely advisory capacity, but it did have the important function of approving the publication of teaching materials. Other materials, such as research reports, were submitted as possible publications to the Council Programme Committee.

The project was first based on a College of Education in London. The Local Education Authority acted as 'grant holder' that is, it undertook responsibility for administering finances. In 1970 the project moved to the University of East Anglia and the University Finance Officer became the grant holder. It is worthy of note in this connection that all Schools Council development projects are based outside the central office. They have normally been housed in Universities or Colleges of Education but some are centred on schools. The result is a de-centralisation of curriculum development under the sponsorship of an organisation based in London.

The Phasing of the Project

In the first year the project team began by defining the problems and their theoretical position. This 'thinking period' is important in that it enables teams to acquaint themselves with relevant research and to start from a firm agreed basis. They also started work on the teaching materials. The Council notified all the Local Education Authorities that the project would be trying out its materials and methods in schools and invited co-operation. As a result a sample of 32 experimental schools was derived (1). These schools were not 'experimental' in the same sense as some 'experimental schools' in Europe. They were

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(1) There were an additional 4 "approved" schools i.e., schools to which young offenders are committed.

ordinary schools selected to provide a reasonable range of school type, size and geographical area. The number of teachers using the materials varied both in size (from one to ten) and subject specialisation (although English specialists were a majority). In every case participation depended on the voluntary co-operation of teacher, headteacher and Local Education Authority. The schools moreover were selected not because they enjoyed privileged positions which would promote the success of the project, but rather because they represented a cross-section of English schools. This is the normal Council procedure for trials of development projects. Towards the end of the first year evaluation procedures were considered and the first evaluator was appointed. Training courses were held for teachers in the trial schools.

In the second year the first packs of materials were in use in the trial schools. Conferences for headteachers and the staff of Local Authorities were arranged. Members of the project team kept in close touch with the trial schools in order to help teachers develop the strategy and to obtain feed-back from teachers and pupils on the materials. This feed-back is an important element in Council projects. It involves teachers not merely in a passive role but rather as direct participants in the development process. Revision of materials in the light of information from the schools went on continuously from this point. In the same year preparations were made for diffusion of the project both to other schools and to Initial Training Establishments. It is interesting to note that this project faced the problem of diffusion at an earlier stage than was the common practice at that time. The evaluator also visited the trial schools and began to evolve his research design.

In the third year all these procedures were continued. The first Handbook and self-training programme for teachers was produced, further conferences for trial schools were held and the first revised materials were published. Open days for Local Education Authorities and meetings with teachers were held. An advisory working party helped the project team to prepare a training course for trainers of teachers.

In the next two years the concentration of effort was on the evaluation and diffusion programmes. The team built up a network of contacts with the Local Education Authorities and arranged courses for their staffs who would continue to train teachers after the project team had dispersed. This was the Director's solution to a recurrent problem in curriculum innovation. Development projects have tended to arouse great enthusiasm, to flourish while there is adequate support and subsequently to lose their impetus, in some cases even to fade away. This is one of the reasons why the Schools Council has set up a Working Party to look into the problems of dissemination.

Materials and Teaching Strategy

The first task of the team was to decide the nature of the materials to be produced and the teaching strategy to be recommended. In reaching these decisions the team considered recent relevant research and the writings of prominent educationists. In England research never dictates what will be done but the Schools Council expects its project teams to be conversant with it and to use its findings where appropriate. There was, for example, good reason for insisting that the materials should be based on topics which were relevant and meaningful to boys and girls of the 14-16 age range and that these topics should be presented in an honest and adult way (1). The team decided to concentrate on the special problems of work in controversial areas and to produce materials to enable the teacher to meet these problems. A controversial issue was defined as one which divides society and therefore by implication divides parents, pupils and teachers. In all, nine collections of material were produced over a period of five years on: War; Education; The Family; Relationships between the Sexes; People and Work; Poverty; Law and Order; Living in Cities and Race. The materials were not in book form. They were collections of 'evidence' selected with such balance as to provide starters for a school collection.

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(1) The Young School Leaver: Schools Council: Enquiry 1. 1968.

They included songs, poems, extracts from novels and plays, letters, extracts from biography, memoirs, and historical works, readings in social sciences, journalism, advertisements, questionnaires, statistical tables, graphs, maps, cartoons, still photographs and slides of paintings. In general, poems, plays and letters were supplied both in printed form and on recording tape. Three further points about the materials should be noted. They were not presented in a structured form to suit a prescribed course. Secondly, there was considerable discussion both in the team and in the Consultative Committee about the right of schools to censor any material which they for reasons of their own preferred their children not to see (1). Finally, the materials were never intended to be complete o· definitive; it was assumed that they would provide original support for teachers, eacl of whom would add to the collection according to his and his pupils' needs. This last point is important. There is a strong feeling in England that no central team can or should even try to produce the materials for universal use. This is consistent with the ideals of a decentralised system bases on local school and teacher autonomy. Moreover, even in areas like the humanities in which there has been an undoubted shortage of materials, there is a strong determination to avoid the creation of a new orthodoxy which could itself become sterile with the passage of time.

More important to the project than the materials was the teaching strategy associated with their use. Mr. Stenhouse felt very strongly that the consideration of controversial issues should make particular demands of teachers. He was especially disturbed by the effect of the teacher's position of authority, which could lead to both an association of one value position with authority and an attempt by children in their responses to guess what the teacher wanted rather than to face the task of understanding through the discussion of evidence. This thinking led logically to the conception of a new strategy, one which has aroused deep interest in many quarters. It has been described in many of the statements issued by the project. One such description runs as follows :

'Democracy values not a totalitarian uniformity in such issues but a dialogue between responsibly held points of view. Accordingly the problem is to allow adolescents to reach views responsibly without being restricted by the teacher's bias or subjected to undue pressures by their fellows. We must aim at a recognition of the importance of individual judgement.'

The basic unit of learning which resulted from this approach was discussion in small groups of some 20 pupils (2). The teacher's role in the group was to promote discussion but neither to dictate its course nor to use it to propogate his own personal views. He was, in effect, an impartial chairman. His other important role was that of research consultant. This meant that he had to have a thorough knowledge of all the materials so that he could feed into the group particular pieces of evidence which were appropriate to the line which discussion was following. He also had to learn to deal with the many problems of group discussion, such as how to deal with long silences, domination by one or two members and non-participation by the shy or diffident. Another of his functions was to facilitate follow-up work. In practice this took many forms, such as a search for further evidence, written work, art work, simulation exercises, visits from outside speakers and visits to places of relevant interest.

This method of dealing with controversial issues was in itself controversial. It involved for most teachers a dramatic change of role. It was a reversal of the English philosophy that the method of teaching is essentially determined by each individual teacher. It changed the teacher's

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(1) Of particular relevance in this respect is the fact that the project team urged schools to consult and discuss the project with parents.

(2) The project emphasised that groups should not be more than 20 pupils, and, if possible, considerably less.

authority position. It could change the authority structure within a school just as its success could be conditioned by that structure and the readiness of headteachers and colleagues to modify it. It was, in fact, not so much a typical curriculum development as an experiment in curricular change and the Director consistently thought and spoke of its as 'research' rather than 'development'.

The issues raised by this revolutionary teaching strategy were revealed most clearly by the production of materials on 'Race'. These materials were tried out and evaluated in six schools and the evidence suggested that freedom to discuss race without constraint and teacher guidance did not lead to reinforcement of pupils' entrenched attitudes or to the propagation of prejudice. However, the evidence was not presented as conclusive and the Schools Council had to decide whether or not the teaching strategy and the materials were appropriate in helping children properly to comprehend one of the most vexed and explosive issues in English society. After long discussions the Council decided not to publish the Race Materials but rather to sponsor a new project which would have a positive approach to education for multi-racial society. However, Mr. Stenhouse obtained a grant from another sponsoring body to experiment further with the project's approach to Race. This is an interesting example of the pluralism in English education.

Evaluation of the Project

Evaluation was undertaken by a team of evaluators who were housed with the project team and thus fully versed in the philosophical position. They were, however, independent of the project team and could therefore retain an objective stance. This represents an attempt to solve a basic problem in evaluation. If evaluators are cut off from the thinking of a project they can hardly be expected to evaluate it. On the other hand, if they are members of the project staff and identify themselves completely with its ideology, unbiassed evaluation is impossible. The Schools Council has followed a variety of approaches to evaluation, one of the most interesting of which is the balance between participation and independence in the Humanities Curriculum Project.

The project was not amenable to classical evaluation techniques based on a three-stage approach.

1. State objectives in behavioural terms.
2. Provide learning experience.
3. Evaluate outcomes.

This must not be taken to imply that the project team had no interest in changes of behaviour. It means rather that their chief area of interest was in the process of educational change. The evaluation design was evolved to meet the needs of this interest. It has been summarised by the leader of the evaluation team as follows:

"Evaluation Design

(a) In a large sample of schools (c. 100)

(i) Gathering input, contextual and implementation data by questionnaire.

(ii) Gathering experiential impressionistic and judgemental data from teachers and pupils.

(iii) Objective measurement of pupil and teacher change.

(iv) Tracing process variation by multiple choice feedback instruments which require minimal effort by the teacher and are monitored by pupils.

(v) Monitoring institutional response by semi-structured diary instruments.

(b) In a small sample of schools (c. 12)

(i) Case studies of patterns of decision making, communication, training and support in local areas.

(ii) Case studies of individual schools within these areas.

(iii) Study of process dynamics by audiotape, videotape, and observation.

To sum up, we now have the job of describing the experience of hundred of schools embarking on work with Project materials, and, moreover, describing that experience in ways which will be helpful to those who have to make judgements in this field."

Results of the Project

Four members of the project team are currently engaged in writing a number of reports on the outcomes of their work. Any overall appraisal of the success of the project must be delayed until all this final evidence is available but some interim comments can be made.

Both the team members and the evaluators have reported on wide variations in the application of the project's philosophy in the trial schools. Some teachers found themselves unable to accept the teaching strategy and used the materials in their own way. Others tried sincerely to apply the strategy but met with only partial success. Others adopted the strategy with conviction and, in spite of subsequent doubts and difficulties, achieved a high level of success. General points made by the Director from the experimental findings at an earlier stage were :

1. The change in teacher role in this kind of teaching is not easy to achieve. As in all teaching, there may be personality factors involved, but it is clear that much can be learned by a teacher who is interested.

2. Almost all schools and teachers are more authoritarian than they know. This pattern of teaching radically changes teacher-pupil relationships and has profound implications for the authority structure of the school.

3. Schools are not likely to succeed if they are unwilling to face a move from authoritarianism.

4. Teachers are not likely to succeed without some re-training.

5. Pupils of average academic ability can achieve intellectual levels in this work which indicate that they have been greatly underestimated.

6. The material to be offered and the method of discussion are equally stable for any 'adult' from school leaver through Sixth Former to University student.

Another important result of the project is that since its materials were published they have been purchased by over 1,000 schools. This is the more striking when it is appreciated that they are expensive and that the amount of money available for purchases of this kind is necessarily limited. Moreover, the schools which have taken up the material have done so of their own free will. There is no doubt that many of these schools are using them in their own way rather than following in any precise way the recommended teaching strategy. However, the least that can be claimed for the project is that it has made a considerable contribution to curriculum theory and caused many teachers to subject their basic assumptions about their teaching to rigorous and critical scrutiny.

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Case study 5

THE CHANGE FROM STREAMING AND SELECTION TO PUPIL GUIDANCE

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1. The Problem of Differentiation

Until the 1950s, the traditional Swedish school system comprised a compulsory seven-year elementary school followed by a number of non-compulsory secondary schools. Pupils would go on to lower secondary school after no more than four years of elementary school. There were more applicants than there were secondary school places and a selection had to be made.

Thus the road to higher studies was distinguished by the following three features: (1) Admission was by selection (2) Admission was based on marks awarded by the teacher and (3) The change-over occurred at the early age of eleven.

With the introduction, starting in 1950, of the new nine-year school, following the adoption of the reform by Parliament, these were the three distinctive features scheduled for change:

(1) Selection was to be replaced by a free choice for the individual pupil (2) The teacher should only provide information and guidance and should not determine the choice of studies by the marks awarded or by any other means (3) The transition was to be delayed from the age of 11 until the age of 15.

The Parliamentary resolution sanctioning this reform stipulated a number of supporting measures. The period 1950-62 was devoted to a long series of trials of different educational and administrative arrangements. These trials included a variety of experiments having the character of educational research and development work.

The problem of a transition to new forms of differentiation between pupils following different courses of study arose out of the policy enshrined in the 1950 Parliamentary resolution concerning measures for the democratization of the educational system. The surveys carried out concerned among other things the question whether it was possible to give pupils a free choice and whether there was a risk of their making obviously mistaken decisions.

2. What Research was Done?

The problem was not primarily regarded as a subject for research, but both government school committees and the National Board of Education embarked on a series of surveys and studies. Among other things, the 1940 Committee of Inquiry revealed considerable differences in secondary school selection between urban and rural areas, between boys and girls and between children from different social classes.

The de facto functioning of the existing educational system from the point of view of those selected was also investigated.

Jonas Orring (1959), on behalf of the 1957 School Committee, studied the progress of pupils through the junior secondary school. Orring found that only about half of the pupils took their junior secondary school certificate in the normal time allotted by the curriculum. About one quarter remained in one class for two years and took the final examination after a year's delay or more, while the other quarter left school and never took the examination at all. The highest drop-out rate, 45 per cent, was in the practical junior secondary school.

Class repetition and elimination were two of the palpable weaknesses of the existing selective system. A new system would have to remedy this. Basic research work on the subject included surveys by Sven Elmgran (1), and Kjell Härnqvist (2), both of whom showed that there

little possibility of singling out theoretically gifted pupils at the early age of 11. It was also found that there was a clear positive correlation between what were termed theoretical and practical abilities. The results also indicated that it was desirable to be able to combine difficult and easy courses.

Most of the surveys supplementing the experimental activities were conducted by experts from the research department of the National Board of Education and were accordingly described in the National Board's annual experiment reports to the government, summaries of which were forwarded to Parliament. A summary ten-year report was published in 1960 (3), dealing with the following surveys, among others:

(1) A survey from the period 1954-57 of pupils' vocational interests in grades 7-9. These interests were found to undergo a process in which the pupils gradually attained a clearer knowledge of their aptitudes. The number of positive choices fell and the number of negative choices rose during the three years of the survey in the case of both boys and girls, which was taken to imply that the pupils attained clearer knowledge of their future vocational fields.

(2) Different forms of information for parents were organized and evaluated. Information activities were planned for the entire country.

(3) An investigation was made of the interaction of study and vocational guidance and teaching in the new subject of civics.

(4) Vocational practice at different work places for pupils in grades 8 and 9 was organized in periods of 1, 2, 3 and 4 weeks. The experience of pupils, teachers and employers were evaluated.

(5) Various forms of contact work and collaboration with school psychologists and school welfare officers were organized and reported.

(6) A new teacher category, study and vocational guidance teachers, commenced training. These teachers worked within the Labour Market Authority and in schools. Various forms of organization and subject combinations were tested.

(7) The ability profiles of pupils choosing different subjects and lines of study were investigated in terms of four ability factors (verbal, numerical, inductive and spatial). Pupils who had opted for foreign languages generally gained higher results in various ability factors than other pupils. The greatest differentiation occurred in the verbal factor. In reality German and French also became "watersheds" in grades 7-9 (not English, which was compulsory).

(8) The sex-option correlation and social class-option correlation were followed up continuously. The correlation was obvious throughout.

A series of special studies was carried out by Sven Erik Henricson (4) concerning the reactions of upper department pupils to guidance activities and subsidiary aspects thereof. These studies were carried out at the instance of the 1957 School Committee, which had been asked to propose a more definitive solution to, among other things, matters connected with study and vocational guidance.

These and other studies in the field of guidance activities can be summarized as follows:

- all of them dealt with the main problem defined by the educational policy makers, viz., the replacement of the former authoritarian selection system by a free choice of subjects and lines;

- the definition of particular problems and the conduct of particular surveys were almost entirely managed by the group of guidance experts attached to the experiments department of the National Board of Education;

- most of the surveys were of a rudimentary surveying and evaluating nature;

- the surveys were closely co-ordinated with administrative measures;

- the institutes of educational research, which had participated in several differentiation surveys, did not play a significant part in the special guidance surveys.

3. Outcomes

The guidance surveys led to a long series of resolutions and administrative measures covering the whole range of activities. Not until after the end of the experimental period, in 1962, can the results of the surveys be said to have also influenced continuing and new educational research projects, e.g., projects concerning the flow of information within educational activities, student democracy, creativity measurements and the forecasting value of study results.

4. The Application of Results and Their Transmission to The Teachers

The survey results were continuously followed up in teachers' in-service training courses, in the training of guidance teachers and in collaboration between the school system and the authorities and organizations of the labour market, both at central and at local level. Over the years a wealth of study and vocational guidance material has been compiled by private producers as well as authorities and associations.

The transmission of current information to the teachers has not generally entailed any problems.

5. The Importance of the Findings

The surveys and the administrative measures have had good results, e.g.,

(1) The selective system of the compulsory school has been entirely replaced by a system of free options;

(2) The frequency of patently unsuitable choices is not greater in the new system than it was in the old.

(3) Class repetition and elimination have disappeared almost entirely;

(4) It has been possible to postpone study decisions, first until the age of 15 (in 1962) and then until the age of 16 (in 1969);

(5) The difference between urban and rural areas has to all intents and purposes disappeared, but there is still a clear correlation between choice of continued education routes on the one hand and, on the other, sex and social factors.

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Case study 6

LEARNING AIDS IN THE SUBJECT OF ECONOMICS IN UPPER SECONDARY SCHOOL. A RESEARCH AND DEVELOPMENT PROJECT IN SWEDISH SCHOOLS.

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1. The Project: Managerial Economics for Upper Secondary School

In 1967 a committee was set up by the Ministry of Education in Sweden to investigate the ability of radio and television to make teaching more efficient and more rational. This committee was entitled the TRU (Television and Radio in Education) Committee and was headed by the former Minister of Education, Dr. Ragnar Edenman. The committee was non-political and included representatives of the school system, higher education, popular education movements and radio and television. All sectors of the education system, from nursery school to university, were included in the experimental activities. Experiments in youth education were based on upper secondary school.

The experimental activities of the committee have been financed by annual grants of approximately Skr. 15 million (= $3 million) out of the national budget. The committee was also given the task of putting forward proposals for the organization of government-financed television and radio productions for future teaching purposes.

Those responsible for experimental activities within the school sector have worked on fourteen different development projects. Research and development projects were selected according to two criteria: subjects were chosen in which the target groups were new or small and which therefore lacked marketable teaching aids, and subjects were also chosen with large groups of pupils where, although teaching aids were available, rationalization was found both possible and necessary in order to make those aids both cheaper and better. Projects within the former group included the managerial economics project. The economics line in the two-year course of studies at upper secondary level was completely new and its syllabus differed widely from its predecessors. None of the teaching aids on the market were suitable for the new course, and moreover the teaching of managerial economics was felt to be characterized by a traditional academic approach which was not relevant to the knowledge of economics required by the pupils in their private lives and in their future careers.

Here as in most cases in recent years, research and development efforts were based on the goals of educational policy defined by the government: better and cheaper teaching aids for particular target groups. The TRU Committee was a group of experts on educational administration which selected research and development problems. Educationists, researchers and producers collaborating in special groups were engaged to carry out surveys and production work.

2. What Research and Development Work Was Done ?

(a) Teaching Aid Construction

In order to make teaching efficient and rational, educational goals have to be established and defined. This calls for a inventory, collation and evaluation of the demands made on education in different quarters. The inventory should provide information concerning the demands made on education by the pupils, by the community, by future employers and by receiving schools. Certain demands from the last-mentioned of these had previously been investigated by Urban Dahllöf (1) at the instance of the 1960 Gymnasium Committee. The evaluation was concerned with the demands which should be given priority in goal definition, i.e. which demands should be met during the limited period of education and to what extent.

Little information was available concerning what was required of education in economics. The curriculum indicated a series of general objectives for upper secondary school which were sufficiently clearly expressed to be capable of formulation as goals for the economics course after concretization and adaptation to the subject. There was no dispute concerning the adoption of these general goals, among other things because they had been resolved on by Parliament.

A worse situation applied as to the demands on the content of the teaching of economics. At the initiative of the National Board of Education, the Institute of Education at the University of Gothenburg had collected a certain amount of information in a small pilot survey (2). The Labour Market Board and the Central Bureau of Statistics had investigated the jobs obtained by pupils from the economics lines of continuation school (3). These surveys, however, provided only rough information on the pupils' employment and did not permit any closer analysis of demands and future work tasks.

The task of drawing up goals for the teaching of managerial economics was further complicated by the fact that these goals had to be based on an assessment of future demands. In other words, present day education also had to prepare pupils for future tasks.

The following guiding principles were adopted in determining the order of priority of the goals of the course :

- Considerable scope should be given to non-discipline goals.
- It was assumed that learning would be expected to have lasting results, so that the learning of subject knowledge and skills would have to be concentrated on really important goals. In other words, fragmentation into a host of less important goals should be avoided.
- The goals should relate to situations which could be expected to confront the pupils within a few years of leaving school.
- The goals should to a great extent cover generally applicable methods of coping with different tasks.

A planning group of ten was set up to discuss and formulate goals. This planning group also formulated relatively unequivocal goals in order to facilitate a discussion by teachers, pupils and recipients of the goals of the teaching. An exact basis for discussion of this kinds had previously been lacking.

The course was divided into thirteen study units, each covering some 30-40 teaching periods. The goals for the entire course were distributed between the study units according to a "work situation principle". Altogether the course comprised some 420 lessons.

This means that the pupils in the study units were put in situations and confronted by problems which they could expect to encounter at work and in their private lives. In order to cope with these situations they had to acquire knowledge and skills, often from several different sectors of the subject at the same time, e.g., concerning purchasing, profitability assessment and marketing.

This situation-directed course of studies was expected to create better motivation in the pupils, which in turn was expected to lead to better learning results.

The time in each study unit was divided between a common portion, an optional portion and a buffer portion. In the optional portion teacher and pupils agreed on goals, content and working methods for the theme of the study unit.

The buffer portion was intended for the supplementation of previous knowledge and for continuous observation of current events.

The common portion took up some two-thirds of the study unit. It was provided with exact goals and a draft working plan describing the course of studies for the study unit.

The backbone of each study unit was provided by a work book presenting situations and problems for the pupils to solve. In order to perform the tasks pupils often had to learn how to apply methods of managerial economics and acquire knowledge concerning facts, backgrounds, etc. They acquired this knowledge among other things by studying method booklets.

The method booklets were a modified form of "programmed teaching", in that the pupils worked at their own speed for one or more lessons using material which step by step led up to the goal. Most of the study units included one or more method booklets of this kind providing the basis for learning particularly important principles, concepts and methods where overlearning was required or learning was thought to require close concentration by the pupils. At the end of the method booklets there was a short diagnostic test which the pupil could use to check his learning.

Pupils obtained the necessary facts and background information etc., for a task either with the aid of authentic material such as reference works, periodicals, professional publications and contacts "on the spot" or else from the subject matter belonging to the study unit. This subject matter provided exact information, e.g., concerning important concepts and was arranged alphabetically.

Each study unit was provided with an exhaustive teacher's booklet with a commentary on the items in the work plan. To simplify the teacher's work, methodological hints were provided together with suggestions for further reading, diagnostic tests with marking instructions, articles from periodicals, copy material for overhead transparencies, etc. A few colour slide series, tapes and television programmes were produced. These media accounted for a small proportion of the entire teaching time.

(b) Testing

The project has been in progress since January 1970. Testing began in August 1971. Seven classes totalling some 180 pupils have taken part in a comprehensive follow-up and evaluation, led by the Department of Educational Research at the University of Umeå. The educational researchers from this institution had previously belonged to the project planning group.

Testing has been aimed at providing an adequate basis for the revision of the teaching aid. The purpose of testing is to reveal as many deficiencies as possible - it is hoped that the experimental activities will also provide specific hints as to how the deficiencies should be remedied.

Testing has not been designed with a view to showing whether the study kit is better or worse than other forms of teaching. Evaluations of this kind will not be considered until the entire kit has been revised and finalized.

Detailed experimental activities with as many as 180 pupils have provided ample opportunity of studying the function of the teaching aids. These activities have included the following:

- pupil questionnaires
- teachers' diaries
- pilot tests and follow-up tests
- meetings of trial staff
- visits to trial classes

The Department of Educational Research at the University of Umea nas compiled pupil questionnaires which are completed by the pupils for each study unit. This questionnaire comprised six open questions and about ten statements on which pupils have given their opinions using a five-point scale. The pupils have had the questionnaire with them throughout the course of their work on the study unit. In this way they have been able to make continuous notes about difficult words, shortcomings in their tasks etc. The questionnaire answers have been completed during lessons immediately following the terminal tests in the different study units. The response frequency has been high - generally more than 90 per cent of all questions.

The results of the questionnaires have been rapidly collated. Preliminary data have been reported two weeks after the conclusion of the study unit. Teachers have kept comprehensive notes on how each item of a study unit has worked in practice.

Some study units have begun with a pilot test to check that the pupils have the necessary previous knowledge. These tests are generally corrected by the pupils themselves. No uniform statistics are kept concerning the results, but the teachers have reported average marks to the testing institution. On the other hand the pupils' results in the follow-up tests have been studied in detail. These results have been reported by the teachers. The average solution frequency per task has been calculated for the entire group of pupils.

The try out teachers have met each time the pupils have completed a study unit. A day has been spent discussing in detail the changes which should be made to the study unit. These meetings have been based on collations of the results of the pupil questionnaires, the follow-up test and the teachers' diaries.

(c) Results of the Project

Testing has served to show the extent to which the study kit has led the pupils up to the predetermined goals. The pupils have assessed the material and the working methods used in the course. Corresponding assessments have been made by the teachers and these have to a great extent concurred with the pupils'. The test results have provided the leaders of the project with suggestions for improvements to the teaching aids. In the opinion of the project leaders, the experiments have shown that series of slides combined with tape recordings work as well as television programmes.

(d) Conclusions drawn from the experiment

The managerial economics project has arrived at the following conclusions concerning the overall questions relating to the task of the Committee as a whole. Television and radio cannot replace the teacher in managerial economics at upper secondary school level. The mere occurrence of these media in the material does not alter the role of the teacher, but systematically planned teaching does change the division of labour between teacher and teaching aids. The study kit mostly takes over those of the teacher's traditional tasks which are connected with:

- Goal analysis
- Planning the term's work
- The construction of extra material
- Test construction

In this way the project is considered to have shown that the teacher has more time left for, among other things:

- Guidance of individual pupils or groups of pupils
- Planning and following up the pupils' training in independent work
- Evaluation of the pupils' study results, e.g., in terms of capacity for co-operation or working technique

- Observation of new developments in the subject, current events etc.
- Contacts with firms, organizations and public authorities, among other things in order to obtain authentic material, which is valuable for teaching purposes
- Preparations for study visits and invitations to guests from commerce and industry
- Collaboration with teachers of other subjects

Work on the economics project is expected to result in a regular teaching aid revised in the light of testing. The agreement which has been concluded with a commercial educational publisher entitles the author to revise the material in the future as well and so keep it up to date.

The economics teaching aid forms part of the TRU experiments, which are major educational and organizational experiments involving several multi-media systems in upper secondary school. This experiment will provide a foundation for decisions by government authorities concerning grants for teaching aid development in youth education in the future. It will among other things provide a basis for decisions concerning the allocation of state resources for production in heavy media (radio and television) for schools.

It should be clear to policy makers and researchers that reforms in the school sector require resources. For many years priority has been given in Sweden to grants for extensive reforms of the school system, mainly of an organizational nature. During the next few years the work of reforming the internal work of schools will focus on teaching aid development, teacher education, in-service training and educational research.

3. Outcomes of the Project

The project began only two years ago, so that it would be premature to state its effects at this stage. One thing seems clear, however: the educational researchers have not spontaneously offered any alternative to that provided by the Government TRU Committee for providing schools with teaching aids in economics. However, the development activities initiated by the educational policy makers have given the educational researchers an opportunity of contributing definitions of goals, means and results. The conclusions of the research and development activities have yet to be approved or modified by local authorities and teachers.

4. Transmission of Conclusions to Schools and Teachers

The production of teaching aids has just begun. As far as is known, private educational publishers have not been anxious to initiate teaching aid projects of this particular kind for the target groups covered by the survey. Responsibility for the provision of teaching aids for the small groups has therefore devolved upon the government committees, which have been able to establish fruitful co-operation with the representatives of research.

5. The Importance of The Research Findings

It is too early yet to assess the importance of the research efforts, but one result seems quite obvious: without efforts of this kind, involving co-operation by educational policy makers, educational administrators and educational researchers, probably no teaching aid would have been produced. In other words, it is evidently not enough to rely on the free forces of the market and the efforts made by them.

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Case study 7

The Schools Council

PATTERN AND VARIATION IN CURRICULUM DEVELOPMENT PROJECTS

By agreement with the Schools Council from copyright material in "Pattern and variation in curriculum development projects" (Schools Council Research Studies Series, Macmillan Education, London, 1973).

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FOREWORD

In 1973 the Schools Council published a research study, under the title "Pattern and variation in curriculum development projects", described as "a study of the Schools Council's approach to curriculum development, with reference to sixteen projects sponsored by the Council and other organisations".

For this summary the Documentation Centre has extracted those items from the books analytical sections which seem most relevant to the second theme of the Colloquium, "the role of the researcher as an agent of innovation in the classroom" supplemented by background material from other sources, and has given details from eight of the sixteen projects which formed the basis for the study. (The full report is available through bookshops - UK price 95p. net.)

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I. GENERAL

OBJECTIVES

How are the objectives of curriculum development projects defined, and who defines them?

The Schools Council is only one of a number of institutions engaged in educational research and development. Although it is not unknown for local authorities or the Department of Education and Science (DES) to initiate and sponsor some of the projects which receive Schools Council grants, it is the Council itself which determines both its own general policy, and, though its programme committee, its current priorities and objectives in the selection of new projects.

The selection procedure for projects is for individuals to submit their ideas, which are then considered by the appropriate committees and subject panels. Some 30 eventually come each year before the programme committee for decision. Once launched through a project becomes the responsibility of its Director, the Council exerts an influence through its central staff and the consultative committee of the project, and by approval of published material. Both projects and staff contracts run for a fixed term, usually three to four years.

Some of the 73 projects which the Council was supporting in 1971 (the date at which this study was written) are more in the nature of pure research, while others are distinctively to be

called curriculum development, in the sense that new teaching materials, methods and attitudes are developed over the years. Curriculum development projects seek to bring about changes in education in terms of what happens in the classroom, or at least to help teachers bring about such changes as they believe are desirable. It is also desirable that when a project is established, the need for it should be clearly expressed, and should, moreover, be a need perceived by the teachers. It is the Council's normal procedure to ensure this for its own projects. Teachers are in a majority on all the committees which examine and sanction its projects, are usually in a majority on project teams, and, in the classroom, ultimately either put the projects' results into practice or allow them to fade into oblivion.

In a 1968 publication (1) the Schools Council felt able to define the successive stages of a curriculum development project as follows :

1) - a careful examination is made of aims and practice in a particular area of the curriculum.

2) - the Council commissions a team of researchers and others to devise and develop materials.

3) - these materials are tested in schools - and then revised.

4) - they are published, and the conference and training courses necessary to introduce them to teachers are held.

This "model" owed much to the pioneering work of the Nuffield Foundation. Since then, however, considerably more variety has been apparent in the large number of projects carried out, and it is no longer possible to say that this particular model applies. What does seem to have emerged is a spread of project activities during the 1960's from curriculum content to teaching and learning methods and teachers' and pupils' attitudes; and from the development of new materials to the development of new skills in teachers and the initiation of school-based curriculum development resting on the ideas and abilities of teachers themselves. Although there remain variations in approach, with several projects relying more on a central team than on dispersed teachers, the spread of teachers' centres will probably increase the part played by teachers. Another element in the process of defining the objectives of a project is its consultative committee. Their composition varies, but they include teachers, headmasters, school inspectors, and representatives of Local Education Authorities (LEA's), universities and other interested parties. A project team reports to its consultative committee at regular intervals, thus receiving a certain incentive to systematic work as well as the benefit of objective criticism. Certain projects also provide for a simultaneous independent evaluation of their work, whose main contribution is often to clarify objectives and show to what extent these are being attained. Finally, the testing procedures in pilot schools, common to virtually all development projects, provide a final opportunity to adjust a project's output.

Each project team acts within the constraints of such factors as examinations and dissemination. Examinations in particular circumscribe the extent to which experiments can be radical, and this resulted in a certain reluctance of late to attempt to alter whole courses. In the past,

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(1) "The Schools Council : The first three years 1964/7" (HMSO, 1968).

however, this has been done in the case of mathematics and science, with the G.C.E. boards (1) co-operating successfully with project teams. At the next level, the existence of the so-called C.S.E. Mode III(2), whereby individual schools can submit their own syllabus to the local examining board for approval, has brought considerably more scope to curriculum development.

For a project of relatively short duration, which seeks only to offer a wider choice to teachers, the problem of dissemination has often proved a major factor in limiting its success, particularly where extensive introductory training courses are needed to familiarise teachers with new knowledge or new methods. While this problem has occasionally been met successfully in the past, the Schools Council has now changed its policy in order to make permanent provision for the dissemination of the results of its projects.

In general, curriculum development assumes that social changes and advances in knowledge impose a more rapid rate of change on the educational system. Curriculum development projects are the organised innovation that is required to overcome the inertia of the existing system. This inertia is largely the property of teaching materials, external examinations, and teachers' own education and experience. Projects seek to help teachers to overcome each or all of these restraints relatively quickly.

EXECUTION

How is project work done, and by whom; how is it financed, and how evaluated?

School teaching is infrequently the immediate previous occupation of project directors. Only about a quarter of the sixteen projects studied were directed by people coming straight from the classroom; in most cases they came from colleges of education or universities. Moreover there is a clear tendency for directors from the classroom to move on afterwards to higher education, and the same tendency with teachers taking posts on projects, particularly for periods longer than two years. For this reason, the terms of secondment, at first considered so important, have lost some of their significance. The Schools Council does not consider it desirable for individuals to become permanent curriculum innovators or developers, even though some of the more research-oriented projects have a place for people of this kind. Particularly where teaching materials are concerned, there is wide agreement that after even a relatively short period away from school, teachers lose touch with the reality of classroom work, however close their contact with teachers and schools may be. When the development phase of a project is extended, some team members may only hold posts for part of that period. Other project directors have felt that the actual development work should be carried out by teachers on a part-time basis, thus retaining direct personal experience of teaching. This has been done in various ways in the North-West Regional project and the School Mathematics project, among others.

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(1) The G.C.E. (General Certificate of Education) examining boards, of which there are eight in England and Wales, set and administer the Ordinary and Advanced level G.C.E. examinations.

(2) The C.S.E. (Certificate of Secondary Education) examination is taken at 16, and its top grade is equivalent to a pass in G.C.E. O level. While the G.C.E. boards can be said to operate nationally, the C.S.E. is administered by a number of local boards.

The great majority of projects are based at universities. The advantages of this arrangement include personal contact with university staff and students, especially in departments and institutes of education, and the opportunity to use university facilities. It can also be, for prestige reasons, an aid in the recruitment of teachers, for whom such a step contains an element of risk regarding career prospects. On the other hand a certain alienation can be felt among some teachers regarding university based projects.

Half of the projects studied were on a fairly large scale, receiving over a varying number of years grants of £100,000 or more; although not always from the single source of the Schools Council, the other principal contributors being the Nuffield Foundation and the DES. Although the School Mathematics project(funded independently of the Schools Council) now gains enough in royalties to be self-sufficient, this is not true of most projects: only three others (Programme in Linguistics and English Teaching, the Humanities Project and Science 5 - 13), out of fifteen projects having published materials, have brought in significant amounts in royalties. Some projects (Science 5 - 13, the School Mathematics Project) have received support from industry, and one (the North-West Regional project) over £200,000 from LEA's.

The size of project teams varies from project to project, but a contributing factor is the extent to which teachers in schools are directly involved in a project's work. The English for Immigrant Children Project made contact with over 200 teachers, for example, while the Modern Languages Project relies heavily on seven-man teams, containing only two teachers. The materials for the School Mathematics project were written by a total of some 60 teachers in schools. Thus the part played by teachers and the numbers of these, can be greater or less depending on the methods adopted. In addition, the consultative committees can play a more or less important part, depending on their composition and on the nature of the project. A team can test its ideas with the committee, clarify its arguments and accept its criticism. In some cases the participation in these committees of distinguished specialists and representatives of major interests outside the schools, especially industry and the universities, can be essential, as in the Nuffield work on science teaching and in the School Mathematics Project, if a project's results are to gain the widest possible acceptance.

The participation of schools in the "pilot" stage of a project and in the testing of materials can be one of the main elements of a project, although some projects place more emphasis on this than others. In one case (Science 5-13) over 600 classes have participated in trials, although a project team's own evaluation work is normally based on returns from a much smaller sample than this. Some projects begin by working in close collaboration with a very small number of pilot schools; but in all the projects studied here, these links have been supplemented by others with schools of varied types, distributed over the widest possible area. The normal method has been to ask L.E.A.'s to nominate schools ready to involve themselves in development work. However experience has shown that project teams must be as specific as possible in their requests, and must be prepared to spend time and trouble in building up a satisfactory sample. Even when this has been done, and project directors have made personal visits to discuss with headmasters, classes teachers and L.E.A. staff the kind of co-operation envisaged, problems have arisen through misunderstandings and teachers moving to other posts. Where such precautions are not taken, co-operation may be relatively ineffective.

An example of the desirability of selectivity is Mathematics for the Majority, where the project wanted 75 trial schools but L.E.A. nominations were nearer 400. In the event the project selected 90 for trials and offered association (use of the draft teachers' guides without close contacts with the project team) to the other 300. Not unexpectedly, many problems resulted, although in some areas, usually as a result of individual enthusiasm, association proved a valuable stimulus to local work.

Some project teams have seen value in beginning with a small number of schools, before

proceeding in the following year to a much wider testing sample before final revision. Nuffield Secondary Science, for example, had a first trial with some 50 schools but worked with over 200 in the following year. The second year is as much the beginning of the dissemination process as an extension of trials. Other projects (e.g. the Humanities Curriculum Project) preferred to confine their initial work to some 40 schools, combining this with a strong programme of training for leaders of local in-service training activities.

Involving teachers in the actual preparation of materials should not be undertaken lightly: the thorough development of materials is a time-consuming job. While it is an over-simplification to imagine that teachers never need more help than new materials and a guide prepared by a central team can provide, it is equally false to imagine that, given a little encouragement, teachers can produce all their own classroom materials. In most cases successful materials can only be obtained by releasing teachers for a period from their teaching duties for this work, and by subsequent training work with local groups of teachers. On the other hand the testing procedure seems indispensable, since several project teams have shown tendencies to produce materials more suitable for a situation they hoped might exist than for the real position in many schools. Even so, the direct involvement of classroom teachers at an early stage may be more helpful in preventing this than trials of materials, for by the time these take place the project team (and sometimes the teachers in the trial schools) may have such a commitment to the work already done as to make it hard for them to accept adverse trial results.

Products

Most curriculum development projects produce 'teaching materials'. Some of the various forms which these can take are the following:

- Complete multi-media kits (including books for pupils, pictures, tapes, films and guides for teachers), which teachers could make almost their only teaching resources;

- a range of course units from which teachers can make a selection to suit their own needs, often combined with a guide to the construction of CSE Mode III examinations;

- a linear structured course leading up to a particular examination (usually G.C.E. O or A level);

- materials for teachers only (both specialised information and suggestions for classroom work), intended as starting points for local development of courses and materials based on teachers' centres.

Few projects depended exclusively on printed materials, and the use which they hope to make of contacts with schools, of teachers' centres and of in-service training courses often decides the type of materials which they produce. Another factor is the degree to which information in an appropriate form is already available: English for Immigrant Children had virtually to start from scratch in this respect.

The main aim of curriculum development is not to break new ground in research: some projects, though, stem largely from previous findings (Programme in Linguistics and English Teaching, Science 5-13, Sixth Form Mathematics), and these and others (English for Immigrant Children) can throw up new facts and give rise to further research. In particular, the last-named project, which received a D.E.S. grant led to two surveys being commissioned by the D.E.S. from the National Foundation for Educational Research and to modifications in the D.E.S.'s own procedures, as well as to further Schools Council projects.

Other projects have produced their own newsletters and periodicals, and Project Technology led to the establishment of a Surplus Buying Agency to obtain surplus government equipment for schools. Other projects have led directly or indirectly to the establishment of permanent agencies associated with universities or polytechnics; an example is the National Centre for School Technology, Nottingham.

The extent to which provision for in-service training can become a dominant feature is best illustrated by the School Mathematics Project (see p. 75). All the other projects seek to reach teachers in this way, but their ability to do so is not always the same. The Schools Council itself does not expect to run this kind of in-service training course after the development work of a project has been completed; this is seen as the responsibility of the established training institutions. But the Council does accept that at the conclusion of any project there should be sufficient people experienced in that project's work, plus suitable materials, specially developed if necessary, to provide effective training programmes through those established agencies.

Evaluation

A separate study of evaluation now exists (Schools Council, "Evaluation in Curriculum Development: Twelve Case Studies", Macmillan Education 1973), but brief remarks can be made on the projects studied here. The word 'evaluation' can cover a variety of activities, including the collection and assessment of the results of trials of materials, the clarification of a project's objectives, the extent to which it meets these, and the results which materials produce in the classroom. The first of these is integral in most projects in that teachers themselves test the materials produced. The attention paid to the other aspects varies considerably. Some project teams have included an 'evaluator' who worked alongside the other members. Others have had their work evaluated by independent authorities, whether by an L.E.A. adviser, by university researchers, or by the National Foundation for Educational Research. In the context of evaluation, the difficulty of comparing courses or methods whose objectives are not the same has been stressed, and most emphasis has been given to seeing to what extent a project meets its own objectives. Whether this is best done within the development team, or whether it is desirable to separate it from trial feedback and the revision of materials, remains an open question.

DISSEMINATION

How widely and by what means were the results communicated to teachers?

The way in which extensive testing of materials acts as an agent of dissemination has already been mentioned, as has the appearance in some cases of project newsletters, and the Schools Council's own periodical "Dialogue". The importance accorded by all projects to the involvement of teachers has also been stressed. In some cases projects have relied on the initial involvement of teachers in trials, on the publicity services and reputation of the Schools Council, and on market forces to spread their materials through schools. Others have made further development, either independent or with the assistance of the project team, by individuals or in teachers' centres, a major part of their programme. Still others have relied on introductory conferences and courses to supply teachers with the incentive and the knowledge to incorporate the project's work into their teaching.

Almost all projects produce materials for publication. These become the responsibility of the Council's publications division and publications committee, and of educational publishers who undertake to publish the outputs of different projects. In this context, cost is clearly a determining

factor. However, when the project's materials add up to a structural course leading to a special examination, as in the cases of the School Mathematics project and the Nuffield Science projects cost perhaps becomes less of a barrier. The early subject-centred projects in particular developed new experimental examinations, which together with the opportunities provided by the Mode III C.S.E. examination and the teachers' guides compiled for this purpose, can be called an incentive to the dissemination of project materials.

The possibility always exists that after the end of the development phase of a project, and the brief blaze of publicity given to the appearance of new materials, the team will break up and the project will fade away. Certain efforts have been made to counteract this tendency. The Nuffield Foundation has allocated a part of the royalties from the Science and Modern Languages projects to special 'after-care' funds for these projects, and committees have been appointed to administer them. The School Mathematics project is continuing its teacher training work with the help of royalties. The Schools Council itself has given 'continuation' grants to carry on previous work or extend it to a new field

Moreover, the Council has recently decided to make permanent provision for the dissemination of the results of all its projects. Since 1971 grants for projects have included an element for dissemination; and recently a decision was taken to increase the number of the Council's field officers and to establish an experimental regional information office in the north. A further opportunity is provided by the recent expansion of local radio services, which devote a number of broadcasting hours to education. This will supplement the parallel expansion of teachers' centres, and the recent government decision to grant leave for in-service training for all teachers on the basis of one full term in every seven years' service.

EFFECTIVENESS

How effective have projects been in changing everyday practice? And how effective in improving it?

It is outside the scope of the Schools Council's study to assess the effectiveness of the various projects studied; at the time of writing few of these projects had completed their work, and insufficient time had elapsed in the case of those which had.

Two examples, however, present contrasting conclusions as to the effectiveness of change. The School Mathematics project now reaches seven hundred and fifty teachers per year through its training courses. It is estimated that over half the secondary schools in the country now use SMP materials. Special examinations exist at C.S.E., G.C.E. Ordinary and G.C.E. Advanced levels and the latter is accepted by university mathematics departments as an entrance qualification. Annual sales of the project's forty published books run into seven figures.

The English for Immigrant Children project produced two successful series of teaching materials, and work continued after the project's end on a third series. But later investigations by the National Foundation for Educational Research have indicated that only 11% of probationer teachers in schools with a substantial immigrant population (22 - 30%) had received help in the course of their training in dealing with immigrants; and that, over a three-year period, only 15% of primary teachers and 3% of secondary teachers had attended appropriate in-service training courses.

The latest information from the D.E.S confirms a lack of substantial progress, and language difficulties remain a persistent cause of under-achievement in schools by immigrant children.

II. PROJECT NOTES

School Mathematics Project (SMP) (1)

Following a series of three biennial conferences (involving school and university mathematicians and some industrialists), a university professor and a group of teachers formed themselves in 1961 into the School Mathematics Project. Financial support from industry over the first ten years amounted to a little less than £100,000. Income from royalties is now enough to provide for all future work.

The objective was to completely revise the G.C.E mathematics syllabus for pupils from 11 to 18 and to provide the necessary accompanying texts, teachers' guides and examinations. The new syllabus would reflect more vividly the up-to-date nature and usages of mathematics and would encourage more pupils to study mathematics in secondary school and at university.

From the outset, all university mathematics departments were consulted in order to ensure acceptance of pupils taught on the new lines. For the first time all the G.C.E. examining boards collaborated in the setting of national SMP examinations at both O and A level.

Almost all the project's materials have been written, tested and revised by some 60-70 teachers in schools. The outstanding writers were periodically freed from teaching duties by relief teachers whose salaries were paid by the project. Materials were tested in some 20-30 schools and up to 10,000 copies of each of the draft materials were made available to other schools. The project's present published output consists of over forty books, mainly teachers' guides and pupils' textbooks, covering courses at C.S.E., O and A level, and in computing.

The need for a large in-service training programme was met from the beginning by a conference in 1962, followed by a series of courses up to the number of eight or ten a year, with up to 150 teachers taking part in each. An average of 750 teachers now attend SMP courses each year. Courses are organised by a regional agent, with the central team providing assistance.

Sixth Form Mathematics Project (2)

Not all sixth form mathematics teachers found the SMP materials wholly acceptable. Accordingly, the Sixth Form Mathematics project was established in 1969, and has received a grant of £75,000 to 1975. Its aim is partly to seek a fusion of traditional and new mathematics, and partly to offer courses which are suitable for university and other further studies not only in pure mathematics but also in the many other fields requiring a mathematical background.

The project has a staff of five and is advised by a twenty-member consultative committee, with a majority of teachers, and including university teachers and D.E.S. staff inspectors. The first two years were spent in analysing the sixth form syllabus and evolving a few experimental materials appropriate to different types of pupil. The team is now aiming to produce a series of materials, relating mathematical methods to concrete situations, and appropriate for (i) the training of mathematical specialists, (ii) the mathematical education of future economists and scientists, and (iii) the general education of sixth form pupils. This will be accompanied by a factual and conceptual analysis of secondary mathematics syllabuses suited to particular needs, and an investigation of the connections between mathematics and physics. The materials are intended both to enrich existing courses and to form a complete one-year course. There is also a twice-yearly newsletter.

(1) Published for the project: Cambridge University Press

(2) Publisher for the project: Heinemann Educational

Project Technology (1)

The project had its origins in the increased demand for engineers; thus during a one-year pilot project in 1966, favourable opinions from the Confederation of British Industry and the engineering institutions on the proposed project were obtained. The project received an initial grant of £180,000 for the period 1967-1970, with a further grant of £84,000 in 1970-72 for the completion of materials and for the necessary teacher training work. Since the end of the project, its work has been continued by the National Centre for School Technology at Trent Polytechnic, Nottingham.

The aim of the project was less to create new subject courses than to create a new attitude throughout the curriculum towards technology, and to encourage subject teachers to introduce aspects of technology into their own teaching. The team also identified a need for local organised co-operation between teachers in schools, those in further education and in universities, and scientists and technologists in industry. The project aimed to carry initial arrangements to the point where permanent organisations could take over responsibility.

The general objective of the materials produced was to promote a full understanding by pupils of the importance and relevance of technology, and to foster their creative ability through direct experience of technological activities. They comprised complete courses in electronics and control technology as well as components of other courses, and included both pupils' dossiers, textbooks, and filmstrips, tapes, etc. Materials for teachers included surveys and reports on technology in schools as well as technical information. A "Bulletin" was established to provide for the exchange of ideas between schools and regional groups. This continues to appear quarterly as "School Technology" together with "SATIS", a newsletter of current information for science and technical teachers. Problems of obtaining equipment for schools have resulted in the establishment of a trial Surplus Buying Agency.

Over 950 schools and five technical colleges in 141 L.E.A. areas have been associated with the project. Diffusion has been organised through regional groups covering all England and Wales, and eight schools in Scotland. A special grant of £10,000 was provided for an evaluation of the project by the Department of Education at Keele University. The project was advised by a 31-man consultative committee, including a majority of teachers, university staff, lecturers in further education, H.M. Inspectors and representatives of L.E.A.'s and industry.

Nuffield Secondary Science (2)

The Secondary Science project developed from earlier work by the Nuffield Foundation on science teaching, which in turn was influenced by previous work in the United States. It was set up in 1965 with a grant from the Foundation of £164,000, with the aim of developing materials for integrated science courses for pupils aged 13 to 16, leading to O level examinations in science. The project began with a conference of teachers which helped to clarify objectives, and the project was carried out in co-operation with the Science Masters Association.

The initial conference was followed by the establishment of twenty groups of teachers in different parts of the country. Nuffield Secondary Science gained much from early work with teachers, but not in the preparation of materials, which was reserved for the central team. A consultative committee included representatives of universities, teacher training colleges, the Inspectorate, L.E.A.'s, schools and industry.

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(1) Publishers for the project:
- (a) Course material - English Universities Press, Blackie & Son jointly with University of London Press,
- (b) Technology briefs - Heinemann Educational.
- (c) Project Technology Handbooks - Heinemann Educational.
- (d) Review material - English Universities Press, National Centre for School Technology (Trent Polytechnic, Nottingham).
- (e) School Technology and SATIS - National Centre for School Technology.

(2) Publisher for the project: Longman.

The project aimed to produce materials based on discovery learning, where the teacher's role was limited to devising the course, selecting a number of suitable materials from the range offered, and giving special advice and assistance to individual pupils. Materials were grouped round eight themes, each with a teachers' guide, plus an "Apparatus Guide", a general "Teachers' Guide" and a further book to help teachers prepare Mode III C.S.E. examinations. In 1970, thirteen of the project's trial schools presented Mode III examinations. Sufficient materials have now been perfected for a selection of three-fifths of them to be enough for a three-year course. Funds have been set aside from royalties to provide for eventual revision of these materials and further diffusion work.

Feasibility trials took place in 16 schools in 1966, followed by development trials in 53 schools in 1967-8. Large scale tests took place in 212 schools in 1968-9 and in 260 in 1969-70. The materials were rewritten twice as a result of these tests. In this process the development trials in a smaller number of schools played the more significant part, the large scale tests providing additional information and acting as the first stage in the dissemination programme. Finally, a specially commissioned evaluation of the project, concentrating on the effectiveness of the project in increasing pupils' motivation, was carried out from 1969 by a staff inspector of the Inner London Education Authority.

Modern Languages Project (1)

The Modern Languages project was begun in 1963 by the Nuffield Foundation, and carried on by the Schools Council from 1967 to 1974. The grant from the Council amounted to £894,000 and the project is attached to the Language Teaching Centre at the University of York. The general objective of the project is to modernise and improve methods of teaching languages. The intention has been to develop new courses and teaching materials, in French for pupils from 8 to 16, and in German, Spanish and Russian for pupils from 11 to 16.

The project team has six sections, one for each of the four languages plus evaluation and publication sections. The language teams each comprise an organiser, two artists, two native speakers and two teachers. Each language section has its consultative committee, and there is also a main committee including H.M. Inspectors, teachers and representatives of the universities and the Nuffield Foundation. From the first, close co-operation has been maintained with the D.E.S. and the Inspectorate, especially as regards teacher training.

The materials have taken an audio-visual form, including teachers' guides, tapes, filmstrips, etc., and concentrated initially on aural-oral skills and later on reading and writing.

Arrangements have been made with G.C.E. boards for pupils using these materials to take experimental O level examinations, and teachers in some trial schools have collaborated to produce C.S.E. Mode III examinations. Although funds were originally allocated for development work and not for the long-term upkeep of materials, the Nuffield Foundation has set aside a proportion of income from royalties for future work of this sort. In addition to the experimental examinations negotiated with the G.C.E. boards, the project has also produced a number of performance tests for each stage of the published courses, to help teachers in assessing pupils' progress. Finally, the project's newsletter "Micklegate" contains new of all new developments and details of the project's materials.

Evaluation was done in the first instance by the project's own evaluation section. In addition, independent evaluations were commissioned from the National Foundation for Educational Research, one on the early teaching of French in primary schools, another on the attainments of pupils using Nuffield materials. The materials themselves were tested in 30 trial schools in the

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(1) Publishers for the project :

(a) Nuffield introductory courses :
French (En Avant) and German (Vorwärts) - E.J. Arnold & Sons
Russian (Vperyod!) and Spanish (Adelante) - Macmillan Education.

(b) Schools Council continuation materials :
French (A Votre Avis) and later stages of Vorwärts, Vperyod! and Adelante - all E. J. Arnold & Son.

case of Spanish, German and Russian, and 60 schools in the case of French. Following publication, comments on the early materials were received from teachers and a revision of these materials has been undertaken.

Programme in Linguistics and English Teaching (1)

Following earlier development work for which a grant of £35,000 was given by the Nuffield Foundation, the Programme in Linguistics and English Teaching, based on the Department of Linguistics at University College London, received a Schools Council grant of £156,700 for four years' work from 1967. The project arose from previous research in linguistics, and was an attempt to explore the relevance of these linguistic studies for the development of new approaches to the teaching of English. The team concentrated on developing ways in which pupils' command of their mother tongue, both spoken and written, might be increased in the classroom.

The Initial Literacy section of the project was concerned mainly with five to seven-year old children, although its materials have also been used in junior and lower secondary remedial classes, and with adult illiterates. Its materials, produced under the title 'Breakthrough to Literacy", included mechanical word and sentence making instruments, allowing children to master the composition and reading of sentences without having to master handwriting and spelling. Methods of work related to the materials produced were tested in 80 schools. An evaluation of the "Breakthrough" materials was carried out at the Department of Educational Sciences at Edinburgh University and will be published in 1974 by Longman.

The materials produced by the Language in Use section (for secondary school pupils) were intended entirely for teachers, and consisted of 110 units, each of which provides the teacher with a plan for a sequence of lessons, together with background information on this method of teaching. Language in Use has been tested in 54 schools, 34 colleges and 29 approved schools (2).

English for Immigrant Children (3)

The English for Immigrant Children project was set up in 1966, principally as a result of the influx of immigrants into schools (particularly schools in certain areas), but partly also in order to apply the results of the large amount of research carried out up to that time. It received a grant of £129,250 from the Schools Council and one of £6,000 from the D.E.S. up to 1971.

The team of twelve was advised by a consultative committee including teachers, inspectors, representatives of teacher training institutes, a university lecturer, the Director of the Centre for Information on Language Teaching and representatives of two immigrant communities.

The aim of the project was to help teachers of recently arrived immigrant children to give their pupils a sound knowledge of spoken English and to start them reading and writing in English.

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(1) Publishers for the project: (a) Initial Literacy section (Breakthrough to Literacy) - Longman
(b) Language in Use - Edward Arnold

(2) Boarding schools for delinquents, under the authority of the Home Office

(3) Publisher for the project: Longman (formerly Books for Schools)

The age range covered was 5 to 16+. To do this the project tried to provide suitable materials, develop appropriate teaching methods, assess different kinds of organisation which might meet the needs of immigrants, and to offer, during the life of the project, advice and help to teachers and L.E.A.'s.

From the start an attempt was made to involve as many schools as possible. Between thirty and forty authorities and some 140 teachers were contacted, but staff turnover was such that within a year 60 of these had changed schools and were thus lost to the project, while whole classes of pupils were also moved to other schools. The difficulty of obtaining information from schools thus became so serious that in the later stages only 10% of project questionnaires were being returned. The task of observing classes and of evaluating materials thus fell largely to the team of twelve, whose recruitment was itself a problem owing to the scarcity of teachers with sufficient experience of teaching immigrant children.

The project first produced an introductory English course (Scope 1) for children aged 8-13, a tape and slide programme for teacher trainers and a colour film explaining the use of Scope 1 materials. These materials were tested in more than 100 schools in 38 L.E.A. areas. Publication followed of the continuation course for children in the same age range (Scope 2). This was tested in 43 schools, including an immigrant reception centre and two English language centres. An alternative beginners course for pupils between 14 and 16, "Scope Senior Course", had pre-trials in 1968, followed by trials with revised materials in 1969 in 80 classes, 16 colleges of further education or evening institutes, and four adult colleges, before being published in 1972. In addition the team have produced a curriculum guide for teachers of infant immigrants, and a film dealing with the organisational aspects of teaching English as a second language as well as beginning work on social background and pronunciation and on a third Scope handbook.

North West Regional Curriculum Development Project (1)

This project had its origins in the in-service training courses run by the Manchester University School of Education since 1958. For the three years 1967-70 the Schools Council granted £30,000 to establish a regional centre there for the training of local teachers' centre leaders. Since 1970, thirteen L.E.A.'s in the north west of England have provided over £200,000 of additional funds for the development and testing of teaching materials.

The aim of the project was to mount a regional in-service training programme, specially designed to meet the raising of the school-leaving age and the needs of early leavers, and centred on the production on a regional scale of new teaching materials.

The project is controlled by a steering committee representing all the major regional interests and including one professional representative from each of the L.E.A.'s involved. The Committee has a majority of practising teachers, one of whom is the chairman. Under the scheme fifteen teachers' centres were established and maintained jointly by the thirteen L.E.A.'s. A regional conference of specialists and centre leaders in 1967 led to the circulation through the centres of handbooks on objectives in certain areas of the curriculum for early-leaving pupils. Local study of these and other proposals was followed by over 100 suggestions from secondary schools for study units. Seven study areas were selected for regional work, others being left to local development. For each development scheme a team of about twenty-five teachers was established, each teacher being released from school for one day a week for this work.

The seven areas selected were creativity in the arts and music, domestic studies, English, moral education, social and health education, experimental teaching methods, and technology. Before publication all course materials, consisting usually of teachers' handbooks, various teaching aids and pupils' workbooks, were given extended field trials, with 75 schools being involved in the assessment of at least one course. Contacts were also made with the two local C.S.E. examining boards, and C.S.E. Mode III examinations based on the project's courses are being prepared.

(1) Publishers for the project: domestic studies - Holmes McDougall; English and music - Blackie & Son; social education - Macmillan Education.

THE ISSUES FOR THE RESEARCHER

raised by his association with educational administrators
on the one hand, and with school teachers on the other

Professor A. Schorb

Munich

1. GENERAL

1.1 Background of research workers

Research workers normally have a training that qualifies them especially for empirical work. Some come from the target areas of educational research, i.e., from practical work in schools or administration; others have entered educational research after completing their studies and without previous practice in this field. These last lack immediate knowledge of the needs and problems of their colleagues, while the former tend to view research mainly from the angle of their previous occupation.

1.2 Educational research in its international context

The professional awareness of the educational researcher is largely determined by international communication. International exchange not only helps him to appraise his scientific methods, but also stimulates new research projects. His relationship with political and administrative bodies as well as with the teaching profession can become critical when international incentives lead the researcher to investigate and discuss facts and conditions which are not yet topical in the educational system of his own country.

1.3 Motivation for educational research

The willingness to support educational research and to make use of its results is considerably strong among all concerned with the educational system in a modern society. Behind this general attitude there is, however, a wide range of different approaches and commitments. These can lead to serious conflict because the different attitudes sometimes oppose each other. The various groups having each a distinctive interest in educational research, are politicians and political bodies, educational administration, various associations and corporations, teachers, parents and "public opinion".

2. THE EDUCATIONAL RESEARCHER AND PUBLIC BODIES

2.1 Congruence of interest between educational research and education policy

Their common task connects the researchers and the political bodies of a country closely. The solution of fundamental questions, the objective approach to problems, the logical and all-embracing nature of scientific thought, all meet the needs of politicians and political bodies who have to keep the whole educational system in view, and to order and improve its components. This constant identity of view is affected, however, by the short lives of successive parliaments each emphasizing different aspects of educational policy against which the long-term perspectives of research do not always prevail.

2.2 Wide interests of the researchers - limited interests of the non-scientific bodies

The more limited the responsibility of a political or administrative body, the more selective is its interest in the field of educational research. Co-ordination only occurs where the limited field of interest of such a body happens to coincide with a partial sector of research. Confronted with this limited interest it is the researcher's permanent task to use the agreement on parts of his work as a basis for getting his counterpart to accept the universal aspects, too.

2.3 Conflict of authority between researchers and politicians

A permanent point of dispute between the educational researcher and the politician is the conflict between expert knowledge and administrative jurisdiction with regard to educational reform. The researcher, with his easy tendency to stand on points of principle, will run the risk of bypassing the responsibility of parliament by campaigning for his own policy and seeking to influence the political authorities through the mass media. Mutual distrust for exceeding one's authority on the one hand and disregarding scientific results on the other is an inexhaustible point of controversy between the protagonists.

2.4 The necessity of communicating the results of research in a comprehensible language

The researcher faces the problem of having to formulate his results and conclusions in a language corresponding to the ways of thinking and of reasoning of his partners in society. The esoteric language of empirical science carries the danger of confining these results and conclusions within academic circles and thus preventing them from breaking through into the real world outside.

2.5 Necessity of taking into account the relevance of educational research to current political issues

Educational researchers have a tendency to consider the results of research under the aspect of scientific progress only. But there is also the necessity of putting general theoretical results into educational practice. The researcher is often regarded as someone who can provide at short notice arguments justifying a political decision or administrative measures when public criticism comes up. This experience often leads the researcher to keep aloof from educational politics and not to meddle with current issues or current practice. If, from the very beginning a research project takes into account the practical question of policy which governs the particular interest of the politician, the researcher can still get his more general principles across, even if his results become the weapons of the skirmishes between different political and administrative bodies, or are played off by subordinate authorities against higher ones, and by citizens' pressure groups against the civil administration and vice versa.

3. THE RESEARCHER AND THE TEACHER

3.1 Different points of view of research and school practices

Educational research ranges from micro-research (particulars of school psychology, school sociology and teaching) and macro-research (e.g. student enrolment and student mobility within the school system as a whole). The researcher considers and evaluates the individual teacher's activities with these more universal dimensions in mind and therefore has difficulty in comprehending a teacher's approach to the researcher's results.

3.2 Teacher's expectation that research will help him to solve his everyday problems

The teacher's daily commitments in his school cannot be suspended. Regardless of his own priorities or of the political situation, he must fulfil his teaching duties, take part in school administration, advise parents, participate in reform measures and so on. Before the complexity of his job with its everyday problems which he must handle pragmatically and with never a chance to go back to first principles, his view of the researcher is of someone who is able to solve part of his problems in principle, without ever being under the permanent pressure to act. The researcher is seldom able to respond to this interest in his activities. It is not his job to solve everyday problems of individual teachers or schools and besides he cannot react as quickly as would be necessary to remove the difficulties of day-to-day school life.

3.3 The competence of the teacher being called in question by educational research

As educational research becomes more and more differentiated, it not only fails to give the teacher help with his many immediate problems, but also puts an additional load on him; more and more of his work is being made the object of scientific reflexion and the teacher is expected more or less as a matter of course to act according to scientific analysis. The simple confidence of the individual teacher in his abilities, his training and his means of action is being eroded more and more. Moreover, most teachers are not in a position to do extensive academic work.

3.4 Difficulties in dialogue caused by mutual reserve

Experience has shown that it is more the educational researcher who avoids dialogue with teachers than vice versa. He seeks a dialogue only in cases where he feels that he might get support from the teaching profession against the influence of other groups. In other instances he is usually afraid that the teacher's limited point of view and his urgent requests for practical help will distract him from his sober intellectual approach and disturb his clear line of systematic research. The researcher's remoteness from the confusing quantity of problems in the applied field accentuate the reaction of the teacher. The latter, aware of the increasing number of survey findings in the area of his own work, gets the impression that his own contribution is becoming more and more limited and ineffective. Many teachers understand research as a general criticism of their work. This mostly leads to helpless gestures of defence, e.g. the remonstration that the funds spent on theoretical research might well help to overcome part of the everyday difficulties of many teachers.

3.5 Need for mutual understanding

Communication between teachers and researchers should have a double objective which, however, is hard to achieve. The researcher should learn from this dialogue that he cannot develop an educational system starting from scratch, and that at best he can use the partial results of his science to improve the existing system. Far from mistaking that small part which can be explained rationally for the whole of the instruction and education complex, he should learn to see and also accept the irrational elements which persist in the teaching situation. The teacher's part is to learn that his actual conditions of work and his everyday problems can only be understood and his situation can be improved if they are put into the wider context of educational research. Furthermore, he should learn to abandon his hopes for a quick satisfaction of his needs and settle for long-term assistance and advice from educational science.

Simulation paper

ARCADIA

THE PLANNING AND USE OF RESEARCH

Introduction

ARCADIA is one of the larger European countries, and has a population of 20 million, of whom some 30% live in the major urban areas and some 40% are thinly spread over large non-industrial areas. The education system is uniform and centralised, with the aim of providing equality of opportunity for pupils and students in every part of the country. Decisions on all matters of educational policy are taken by Parliament, or by delegation to the Central Education Agency (CEA). Educational spending represents at present some 7.5% of G.N.P. and educational research takes up 8% of all money allocated per annum by the government to research of all kinds. Of this 8%, two-thirds are devoted to research at school level (pre-school, primary and secondary).

The country has six universities and eight teacher training colleges with well developed research functions. The school system has been reorganised recently on comprehensive lines. At present eighty-five percent of the 16-19 age group receive upper secondary education.

The main research centres are the universities and teacher training colleges mentioned above. Research finance comes from three main sources: the government, via the ordinary research budget administered by the universities or colleges themselves; the CEA in the form of directly commissioned research contracts; and various private trust funds. In the 1972 programme of the CEA some 55 research projects were distributed between the teacher training colleges and the universities. In addition, a certain amount of development work was carried out by the CEA itself.

The research projects cover the following main fields:

- School development, trends and educational requirements;
- School organisation and its effects;
- School staffing and teacher training;
- Teaching:
  - aims and curricula
  - methods
  - assessment
- Development and adjustment of the individual;
- Development of diversified post-secondary education.

The population is linguistically and culturally homogeneous, and public interest in educational policy is intense.

A team of independent researchers from abroad was invited in 1972 to study this educational research system and to make an assessment of it for the CEA. Apart from many very favourable comments, the following criticisms were made.

1. Research Priorities

The CEA has always refrained from attempting to decide priorities for educational research either over the whole field or in particular areas. Resources for educational research are allocated

through a more or less ad hoc procedure (details of which are given under Project Selection, below) which is not, in the opinion of the visitors, governed by either a selection policy or a general research plan.

There are various possible explanations for the lack of attention paid to this question. One is the laudable desire to allow scope for initiative and to avoid infringing academic freedom, and the feeling that decisions on priorities are too political to come within the jurisdiction of the CEA. Another is that the research budget has been growing so rapidly in recent years that previous conceptions of needs have been overtaken by the supply of funds. Since growth has not been accompanied by planning, the CEA has been reduced to sharing out more or less equally between sectors, institutions and interests, the sudden flow of funds. A third is that the government commissions for educational reform, which have been engaged for the last few years in a comprehensive review of the educational system, have commissioned and executed the necessary studies on their own initiative, thus making a parallel CEA programme redundant in this respect.

Whether or not all or any of these reasons have applied, the visitors suggest that the question of priorities is fundamental to any educational research policy, which cannot properly be said to exist without them, for the following reasons.

- If the goals of educational research and development are never officially examined and stated, neither officials commissioning research nor researchers carrying it out can work on any other basis than their own individual notions, which will often differ. In this situation project evaluation becomes impossible because there is no agreed basis for assessment. Officials, from their different viewpoint, find it difficult to assess and therefore to use the results of work which the CEA has itself commissioned; while researchers complain that their work is misunderstood or ignored. Indifference or hostility thus invade the relations between official and researcher, and are extremely harmful to academic freedom. Nor does the researcher really benefit from a freedom which tends to rob his work of its effectiveness.

- The object of a publicly-funded educational research programme is surely to build up a body of reliable information on the basis of which to take necessary policy decisions. Identifying the major questions, and in consequence the research needs, is not, in the opinion of the visitors, a function which ought to be left to an ad hoc committee appointed by a particular government, probably with certain political intentions and short-term interests. It is a permanent duty of the CEA to ensure the impartial supply of the necessary information. But if research is planned and financed in a haphazard and unsystematic way, it is likely that many urgent decisions will be, and have been, taken on the basis of insufficient or unavailable information.

- To suggest that a policy based on priorities should govern the allocation of research funds should not mean that any sector or institution must be neglected in favour of others engaged on more urgent work. On the contrary, in the visitors' opinion, it is incumbent on the CEA to use a priorities list to impose a certain cohesion on the various, often conflicting, interests and demands. It would be in the interests of all to accept this cohesion, and the educational research "plant" of the country might then develop less haphazardly, with an equal distribution of resources and with less duplication.

The group of visitors underlined repeatedly in its report that educational priorities should not be determined exclusively by political interest, administrative concerns or academic preoccupations. The mechanism necessary to establish a balanced list of priorities should be the most urgent question for the attention of the CEA. However, the group did not state in any detail what the mechanism should be and left this matter over for further consideration by Parliament and the CEA.

2. Project Selection

The present system rests on suggestions for desirable projects emanating from the various departments of the CEA or put forward by local education authorities or teachers' associations. Researchers from the various centres then comment on these suggestions, and a committee representing the research community assists the CEA in assessing projects before the funding is decided. Most projects are planned to last four to six years.

The programme arrived at in this way is not, of course, a discrete conglomerate of unrelated projects, but there is not sufficient cohesion and the advantages of long-term funding and central planning, which the present system should undoubtedly enjoy, tend to be lost because project selection is in the hands of a multitude of, effectively, part-time advisers.

The very wide participation involved, and the open-ended stance adopted by the CEA, carry in themselves many advantages which ought not to be diminished. The initiatives of researchers, teachers and local administrators should certainly not be disregarded, and indeed ways should be found to strengthen their participation. But the visitors were of the opinion that the present system draws too little benefit from this participation, and still loses many of the advantages of central direction. For suggestions are made by each sector in isolation from the others and are considered in isolation, whereas the greatest need for participation is neither in the collection of ideas nor in the assessment of research projects, but in their planning and programming. The role of the CEA should not be, as it tends to be at present, that of a remote and aloof final arbiter, but of the managing director in a partnership with the researchers who will carry out the project, the teachers and administrators who may be asked to test it, down to the pupils and students for whose benefit, it is hoped, all this work is to be done.

Moreover at present no explicit, generally acknowledged criteria for project selection seem to exist. As a result, it is difficult to make a useful comparison between one project and another, one kind of research and another, one field and another. The objectives of each research project in the framework of a general research strategy are not known, and there is consequently no way of knowing to what extent they are fulfilled, in other words of assessing results.

The CEA, then, should modify its present loose system of consultation, and take a more active directing role while at the same time increasing the participation of all the interested parties and drawing them closer together. Consequently the group of visitors recommended that the following changes be made.

- In the case of fundamental research, the objectives and possibilities are best known to the chair holders at the universities and schools of education. It is in the interest of the CEA to further fundamental research since the knowledge it forms is essential to the skill and efficiency of research workers and teachers. A direct unearmarked grant should therefore be given annually to each of the holders of chairs in education, for one research project in his primary interest. This will ensure equitable distribution of funds and the personal commitment of the project leader, which gives a possible guarantee of efficient use of the grant.

- In the case of applied research, the CEA should state the most urgent problems, their nature and dimensions, and request proposals for their solution. The best working method might be to create research organisations specifically concerned with a general problem area (e.g. evaluation, curriculum development, personal development) with a guaranteed annual budget. Accompanying advantages would be long-term programme-planned budgeting, a simultaneous attack on several aspects of a problem, shared technical facilities (data collection and data processing), cross-fertilisation of ideas, continuous evaluation of projects and a co-ordinated testing programme.

- Development projects should be entrusted to special development centres and be given equal status and funds with the hitherto more prestigious "pure" research organisations. Development work is at least as important, from the point of view of the "users", as research work, and should be financed and organised accordingly.

The result of these changes, it is suggested, would be a more cohesive national research programme whose projects can be more easily assessed, better planned, and carried out in close co-operation between all the parties involved. It would nevertheless be very damaging if the national programme became the only programme and if projects of great local interest, or small projects representing early steps into an unknown field, should disappear as a result. The group therefore hopes that the resources saved by the rationalisation of the project selection system can be given in outright grant to research institutes, to be used on their own initiative for work of this kind. In the group's opinion it would be sufficient if 5 per cent of the actual research funds for education were allocated for this purpose.

3. Project control

The present mechanisms for project control rest entirely on the personal guarantee of the professor's prestige, combined with the advice of a reference group of subject specialists, teachers, local education authority officials, and a liaison officer from the CEA, which also employs project secretaries to maintain links with on-going projects.

The visitors hesitated to make recommendations here because the present system of project control is, in theory, simple, direct and efficient, avoiding excessive central interference and involving a "consumers' committee" in the running and evaluation of the project. However, in the opinion of the visitors, the weakness of this system is that, as a matter of fact, few professors actually lead their projects. They act as prestige front men, and, in some cases, even when they are the titular project leader, their influence is purely nominal. Secondly, the reference group can have very little influence on a project unless the project leader himself sets out to involve them systematically in its operation. These are, unfortunately, extremely severe defects.

Project control is of considerable importance in the research process, and the complaint is often heard that, as projects are usually planned for up to six years, a bad, unsuccessful, or wasteful project, once begun, will be allowed to continue unmolested to its natural end. Both teachers and members of the public share this suspicion, and strongly resent the waste it entails. In this situation the group feels that the CEA must insist that before the inception of each research project a detailed, complete, programmed and costed plan be drawn up, with provision for regular annual progress evaluations, assessing interim achievements, possible over-spending, delays and/or any unforeseen difficulties. If a project encounters such problems as make it unlikely to achieve its aims, it is necessary to cancel it.

The group wished to point out that this rather uncompromising method need never be used if the recommendations for Project Selection achieve high efficiency. But if the CEA does not at least have the option of using this sanction, it would be in the natural way of things for everything to slip back into its old ways and for the more constructive reforms to remain a dead letter.

Research design and evaluation are at present in their infancy in all countries. Few research plans ever refer or relate to other previous or concurrent projects (see Co-ordination below). Many concentrate exclusively on partial, and even on trivial aspects of a general problem. Few researchers tackle the problem of conflicting results from other projects. Some projects are dominated by their initial hypothesis, rest on built-in value judgments and attain the status of self-fulfilling myths.

The principal need of the planner, therefore, is a reliable model for research design and evaluation. In some countries the first attempts are being made to construct such a model as a basis for the planning and execution of research and for the assessment and use of its results. The CEA should make efforts to benefit from this work and if necessary to share in it.

4. Co-ordination

At present, co-ordination within institutes is the responsibility of its head, who also conducts staff seminars dealing with methodological problems and other matters affecting more than one of the institute's projects. The CEA conducts similar seminars on problems common to related projects at several institutes.

The group of visitors recommended that this policy be pursued further by the CEA. The very diversity of research institutions presents a handicap to the CEA's efforts at co-ordination. It must ensure that each research team knows the progress of other relevant work and that they are all integrated to some extent within one overall plan. Similar efforts must be made on behalf of teachers and administrators, who can easily feel excluded from the research machine and yet expected to implement its conclusions (see Dissemination).

One blind alley seems to be the present number of large-scale data collection projects. There is a tendency for data to be collected in a random way, in the belief that the sheer mass of it will be useful in a number of ways, but without relating it specifically to any concurrent research. This results in a double wastage : the data collection project produces nothing but an unusable or unused mass of information, while the problem-centred project is forced to do its own data collection. The first project thus becomes no more than a massive correlational fishing trip.

The advantages claimed for large scale data projects, and for longitudinal studies are genuine enough : in the first case, economies of scale, the reduction of unknown factors to negligible proportions, and the availability of a large corpus of related information to a number of more detailed projects. In the second case, obtaining a "dynamic" picture of the changes and developments in pupils and students, of the interactions of various factors, and of the impact of given events, presents a contrast to the normal picture of a static sample, observed only from one angle. But the group felt that the present methods or indeed any methods of such work, can never have more than a distant connection with problem-centred work. Certainly, joint data-collection can be financed as a separate shared service for specific related projects with similar data needs; computer time, programme writers, punch-key operators, and statistical consultants can work for several project teams. Data-collection projects per se should be funded in exceptional cases only. The group held that such work has a tendency to take place in isolation, is over-ambitious and over-expensive, and the conclusions that can be drawn generally mask contradictions and misrepresent more than they reveal.

Another point highlighted in the group's report is the lack of co-ordination with research work carried out abroad. The group found that a considerable number of projects recently launched and founded by the CEA had already been completed in other countries and reported in voluminous publications. Such research should not have been duplicated, but it should have been examined to see how far its results were relevant for Arcadia. The group also noted that the Council of Europe's Research Surveys of 1968 and 1970 were duly shelved in all the research organisations visited but were obviously seldom or never used. Arcadia's researchers have a good command of English and are well informed of research published in the U.K., and in the U.S.A., but they cannot read, as a rule, research published in French, German or Russian. Thus the European research potential is not fully exploited. The group therefore recommended that the CEA should give full support to the development of a "European ERIC system" at present under study in the Council of Europe's Educational Research Committee. In this connection the group stated that according to its estimates some 10% of national research funds for education could be saved and allocated to other purposes if foreign educational research were properly known and adequately used.

5. Dissemination

The existing dissemination methods are the major research journals, and a Newsletter on educational research published by the CEA but limited to projects in progress. The findings of completed research projects must also be given an outlet, as must further news of associated policy changes, school experiments and test results. The CEA's Newsletter is clearly well placed to do this.

Too much importance cannot be given to dissemination which bridges the information gap between the laboratory and the field. However at present, since dissemination is the last step in the R and D process, it seems to be last in the queue for available funds and is consequently starved of resources.

Marketable research results, i.e., teaching packages and software, enjoy the production, distribution and sales resources of the interested publishers, but the majority of research results have to depend on less efficient methods. Moreover information is effective only when it reaches the person who needs it, when he needs it and in a form he can use. The circulation of periodicals or Newsletters cannot ensure this effectiveness.

The CEA should therefore borrow the production and marketing techniques of publishers to create a demand among teachers for innovation, to involve them in research projects, and to satisfy their need for results in a useful form. The obvious means are the new forms of in-service training currently being discussed in Arcadia as in other European countries. In-service training clearly costs money, but in view of the importance of dissemination this must be accepted. However, if in-service training takes the form of lectures by "experts" to the uninitiated, it will be wasted. There is already enough suspicion and distrust among teachers of "expert" researchers and inspectors, which can only be worsened by such ex cathedra proclamations of infallible new dogmas emanating from research institutes.

The group therefore recommend the establishment of a Teachers' Centre in each county of the country, on similar lines to Teachers' Centres in England and Wales supported by the Schools Council. The Centres should be based on voluntary co-operation by the teachers, but teachers participating in their activities should get a reduction of their teaching loads. The Centres should be involved in all R and D projects carried out in their respective counties, should organise demonstration visits and participatory courses for the experiments concerned, and be responsible for the feed-back from the base to the researchers in the laboratory.

6. Politics and Research

The group used "politics' here as a general term for all the decisions, assessments, and value judgments which go into the framing of a general educational policy, and of the consequent laws, administrative edicts and texts down to instructions to local administrators and the organisation of schools and teacher training. Clearly many of these decisions will be based on ethics, ideology and social or even financial constraints. But more and more political decisions at all levels are now being based on research, and this poses the problem of the political role of the researcher.

However the researcher occupies a no-man's land between hell and high water. He has neither any political nor any actual responsibility for the results of his work. To take one absolutely hypothetical example : if by a new policy, based on research findings, special schools with special curricula were to be established in poor urban areas, and were then to become ghetto-schools, slum schools or educational poverty traps (to use rather emotive words), the researcher would be neither the one to suffer (unlike the children, teachers and parents), nor the one to be held responsible (unlike the authors and administrators of that policy) for its results. Moreover academic researchers, for professional reasons, can always cover themselves from attack by maintaining the theoretical,

non-political level of their work. The examples they quote and the references they give are as often the experiments and writings of other researchers as actual and verifiable practical results.

The researcher neither governs nor teaches: this constitutes his academic freedom, but it is a freedom conquered at the expense of both governor and teacher.

It would nevertheless be inadmissible for government control to be imposed on the researcher by such crude methods as the dictation of research work and payment by results, examples of which have been known in the industrial and commercial fields. And the majority of the teaching profession has been described, not only in Arcadia, as fundamentally hostile to innovation, uninterested in research, ignorant of its findings and conservative in its teaching methods.

Neither governors nor teachers would seem then to be able to take over some part of the researcher's role, although this is of vital importance for the improvement of education and for the development of a new social policy aimed at raising the "quality of life". The role of the researcher, which comprises certain new functions, needs further clarification and definition: in particular of its dual aspects of partner to the national and local decision-maker and agent of innovation in the field. The group felt unable to make any definite recommendations on this matter, but it listed a number of problems for further study. It held that the main problem was to match the academic freedom of critical expertise with the democratic control of the researcher's action in all areas in which he performs the functions of a consultant. One possible way for achieving this might be, in the group's opinion, to replace technocratic and uncontrolled co-option by democratic procedures. The research consultant should share the political fate of those who decided to employ him: his contract would end with the legislative period of parliament or the tenure of office of a local body. The contracts by which researchers are engaged as consultants should follow a uniform national pattern defining more precisely their rights and duties. Finally the group stressed that all these were only tentative proposals and that much more thought must be given to these problems, whose discussion has barely begun at all, even though they are fundamental to the future of society.

Simulation paper

ZEPHYRIA.

MULTI-LEVEL PLANNING AND PILOT PROJECTS

Introduction

ZEPHYRIA is one of the larger European countries, is highly industrialised and has a population of over 50 million. Although the birth-rate has fallen over the last decade as in other European countries, the population continues to increase comparatively rapidly as a result of immigration from various areas, and to become less racially and culturally homogeneous. Population is heavily concentrated in industrial-commercial urban areas. The education system is decentralised, in conformity with the general distribution of political authority in the state, most decisions rest with the large regional authorities, a third of whose budget is taken up by education, which thus forms one of their main areas of concern. At the national level, a number of advisory bodies exist to contribute their expertise to the planning and co-ordination of educational policy. Furthermore, the Education Ministry of the Central Government exercises an overall planning function, promotes research and pilot projects and contributes to the financing of higher education.

There are some forty universities and a small number of regional research institutes which between them carry out most educational research, sometimes at the request of the various advisory bodies. The school system is in most areas a tri-partite one, comprising a common four-year elementary education supplemented by three different levels of secondary education in three different kinds of school. However, numerous experiments with comprehensive schools have recently been launched. At present some 20% of the appropriate age group complete upper secondary general education.

Among the proposals for far-reaching, not to say wholesale, reform of every level of the education system which have been discussed in recent years, the following have obtained more or less general agreement on the political level and now await the results of research and experimentation to determine how they may best be implemented :

- the introduction, on a voluntary basis, of universal pre-school education for all three- and four-year olds,
- the reduction of the compulsory school starting age from six to five, thus lengthening compulsory schooling to ten years,
- the overhaul of the structure and curriculum of the primary school, and the introduction of comprehensive schools at the secondary level,
- the renewal of teacher training to create a unified profession, incorporating subject knowledge, pedagogical training and knowledge of the social sciences, with greater emphasis on practical training and in-service courses,
- the expansion of institutes of post-secondary education from their present capacity of 450,000 students to one million in ten years' time,
- the creation of comprehensive universities to cater for this expansion.

A team of independent researchers from abroad was invited by the Government of Zephyria to study the organisation of educational research in this context, and to make those comments concerning its present state and future organisation which they thought necessary.

The following are excerpts from their report.

1. General observations

With respect to the structure and the content of the educational system, we have observed a number of shortcomings that clearly demand reform. The present state of the system still reflects a class structure in society which does not fit the requirements of a modern, democratic and industrialised country:

- Only 40% of all three- to five-year old children receive a pre-primary education;
- the secondary school system is on the whole still a tri-partite system which almost exactly mirrors the major social class and occupational divisions of the country, thus transferring them to the second generation;
- only some 15% of secondary school pupils have the possibility of entering some form of higher education.

Despite the facts mentioned above, a dramatic transition towards a modernised education system can increasingly be expected. The changes which are about to take place are not limited to quantitative developments. On the contrary, innovation in curriculum development, teacher training, and participatory educational planning are some of the foci upon which public debate has concentrated. An ex-post analysis would lead us to the conclusion that the major shortcomings of the present state of the education system have been identified; many reform plans have been worked out by quite a number of bodies with different degrees of political power; the public debate has led to a larger involvement of many political groups. Unfortunately, however, the absence of active involvement of those concerned at the local level, and of a decisive political consensus between the main political parties of the country has so far failed to give any major impetus to the implementation of reform policies.

The transition period thus seems to us likely to be excessively long in the light of the complex social requirements which demand permanent reform processes in many, if not most, parts of society. In our opinion, the "take-off" has not yet begun; and due to the lack of a general political consensus, there is no indication of when and how the break-through will take place.

At present educational expenditure represents about 4% of G.N.P.; and educational research takes up about 11% of all public research expenditure at the national level. In relation to total educational expenditure, money allocated from public funds to educational research is increasing rapidly and may rise to over 2% by 1985, from its present share of 0.5%. Before discussing the problems of educational research, and of its organisation and finance in Zephyria, some comment should be made on the decentralised structure of the country and its implications for the planning procedure of educational research.

2. Multi-level educational planning

Because of the decentralised structure, and in order to take into account the complexity of the educational planning process, we felt that the concept of "educational planning levels" as an additional structural dimension of the educational planning process should be introduced. This gives us the opportunity of analysing the relationships between the participants (e.g. administrators, teachers, students) involved in educational planning at different levels, a process we would like to call "multi-level planning".

In the case of Zephyria, several observations can be made. Educational planning and policy have been, and still are, primarily a regional matter as far as the institutions of the educational system are concerned. Looking at the nation as a whole, the country is an example of extreme decentralisation. But seen from the point of view of the inhabitants of each region the country is notwithstanding extremely centralised in the regional administrations. Educational planning and decision-making takes place entirely in these centres; and is a process which seems to us to be over-bureaucratic and over-centralised in each of the regions.

The national Government has recently been given a degree of authority in the educational domain entailing an influence on educational planning, which has thus moved from a two-level (institution-region) to a three-level process. However, in order to handle the major tasks in modernizing the educational system, two more levels are required. Between the regional and the institutional level, the local level has to be taken into account. In our opinion this will lead to more flexibility and to a higher degree of participation, and therefore of effectiveness, in educational innovation and decision-making; it will allow communities, local school officials, teachers and students, as well as parents and other interested persons, to get actively involved in the planning process.

Furthermore, multi-level planning has to take into account the international level. In the case of Zephyria this is of the utmost importance, because the country is a member of a larger economic community and, in the process of economic and social integration, has to deal with an increasing number of international implications for the further development of the national education system.

3. The consequences for educational research

The country has to demonstrate its capacity to adapt its education system to match a society of increasing complexity. Thus the traditional dichotomy of centralisation versus decentralisation is no longer the hot issue. Much more important is how to organise a multi-level planning and decision making process bringing into play all of the five levels mentioned above; and how to organise educational research on the same levels.

Planning educational research requires the following four distinct processes:

(a) goal-seeking
(b) programming
(c) implementation
(d) evaluation.

All these processes are characteristic features of research planning. Taking into account the five levels it becomes clear that educational research, like educational planning, is a multi-phase and multi-level search process, which has to be organised in such a way that the phases of the different activities are closely interconnected. Research planning becomes a process of permanent revision and learning of which the intermediate outputs - and educational research results are, like all the conclusions of the social sciences, always intermediate and never the "final truth" - have to be fed into the process of educational development which ought to be organised along the same lines.

(a) Goal-seeking

In the case of educational research, the process of goal-seeking requires a substantial attack on the problem of formulating research priorities. This task is likely to be extremely difficult in Zephyria, because research priorities cannot be formulated within an organisational vacuum. No general research plan exists at present. The political establishment is extremely disappointed with

the "academic" nature of most educational research activities. The research establishment, on the other hand, is per se unable to develop research priorities: for a researcher everything can and should be a subject for research. Without a framework of political priorities in the development of education it will be difficult to come even to preliminary conclusions. The present discussions in the various advisory councils at the national level will necessarily, in our opinion, come to the conclusion that the research community (as constituted by the representatives of the various sub-disciplines in the educational and social sciences) is not in a position to determine educational research priorities. It is therefore urgently necessary for Zephyria to develop an institutional mechanism to meet this task of goal-seeking and goal-formulation. Political, and administrative as well as academic interests should be represented in this body.

(b) Programming

The process of programming educational research requires a high degree of consensus among the interest groups concerned. However, the elements of programming correspond to the different functions of educational policy, administration and research. One of the most important tasks of the political element in education, if not the most important one, is the allocation of money for educational research. Until now the allocation process has in our opinion been a more or less ad hoc activity. The growth of the research budget from 0,02% of total public educational expenditure at the beginning of the 60s to about 0,5% at their end has not been accompanied by a planning policy. Since the target of 2% in 1985 has been mentioned it has now become vital to develop a planning mechanism in the field of educational research.

A second problem in programming research is that although some research activities are important for the nation as a whole, others have to take into account the special features of various regions and/or institutions. For this reason it may be extremely valuable to undertake parallel research even though it looks as though research money is being wasted in this way. Such parallel research activities at regional, local and institutional levels might usefully be followed up with a comparative analysis on the national level.

(c) Implementation

Research work is carried out at many places. Traditionally, of course, universities, teacher training colleges and independent research institutes take the lion's share. The question of how to identify the "optimal mix" is complicated by the fact that the whole system of post-secondary education is at present in a rapid and rather shaky process of change. Numerous university experiments are in their trial and error phase. This should not prevent educational authorities from allocating more money to research on the university system, to be undertaken within the university system, as such research might be very helpful in rationalising the change process, increasing the rate of innovation, and bringing the whole process to a successful conclusion as early as possible.

A second key field is curriculum development, which should take place at the local and institutional level and involve as many as possible of those teachers and students who will be affected by these changes. If curriculum reform is attempted solely from above, without teacher co-operation, it will be nothing but a hollow gesture. This raises in the most pointed way the need to introduce a much more democratic spirit into the administration of education, which is much too important to be left solely to the officials and the educationists. Such local emphasis should not prevent research agencies at the regional and national level from co-operating in the formulation of priorities or from working towards integration in the field of curriculum development.

(d) Evaluation

Educational research must be evaluated in the same way that the results of educational planning have to be taken into account for future "rounds". However, two different functions of

the evaluation process should in our opinion be clearly distinguished. One function relates to educational research within a system of knowledge, whereas the other relates to educational research as a social sub-system, closely connected with the other sub-systems of society. The so-called relevance of educational research has always had two dimensions, an academic and a political dimension. Very often these two conflict with each other. It is for this reason that we assume that only a variety of different educational research activities designed for different scientific and/or socio-political purposes will help to reduce the number of complaints which are heard from the political establishment as much as from the research establishment, using contrasting arguments.

4. Concluding remarks on the situation of educational research

The two orientations of the research community towards the academic system (internal orientation) and the social system (external orientation) on the one hand, and the multi-level organisation of society on the other, clearly indicate the complexity of the tasks to be solved.

Educational researchers receive their basic education and training in different social sciences. Their abilities in dealing with educational problems are correspondingly limited in one way or the other. An educational psychologist, for instance, is more interested in micro-systems: his abilities should be exploited for classroom research, i.e. research at the "lowest" level, to wit institutional level. Economists are specialised in either micro-economics or macro-economics: their abilities should be used to analyse quantitative relationships at national or regional level (macro-level) or local or institutional level (micro-level). Educational sociologists also offer different areas of specialisation. Those who specialise in social systems theory could be extremely helpful in formulating multi-level strategies for educational innovation and change.

The notion of interdisciplinary educational research is a programmatic one; its execution creates difficult problems in theoretical, methodological and organisational terms. A mere pile-up of disciplines in educational research is far from fulfilling the task of interdisciplinary work. Furthermore one must always keep in mind the internal orientation of the academic community which seeks to meet academic standards which are primarily "mother discipline" oriented.

The external orientation of research is either completely ignored (by those researchers who concentrate on full-time fundamental research) or completely internalised (by those who are, either by interest or ex officio, in close contact with policy, planning and administration such as educational research directors). Researchers in the second category are in constant danger of losing their contact with the academic community.

The political system has a different approach to problems. In a nutshell, one can say that the main task of the scientist is to increase complexity (identifying problems behind problems), whereas the main task of the politician is to reduce complexity (solving problems by immediate action).

In a federal country with a democratic system, elections and legislative periods, which differ from one region to another, play an important role in setting priorities in the planning of educational policy. Generally, there is a tendency towards short-term solution mechanisms. In addition to this, the cyclic performance of the economy has to be taken into account. The Government's task of fighting inflation, recessions, etc. has direct implications for the financing of education and educational research. Last but not least, the distribution of responsibility does not allow the development of a clear one-dimensional planning rationale.

5. Recommendations

We find it extremely difficult to conclude this chapter of our report by formulating concrete recommendations for improving the educational research system. There is already in the country

a growing consensus of informed opinion on what might be the main elements of a re-organisation of existing planning, research and development structures and we hope the following recommendations, although of a very general nature, may be helpful in contributing an "outsider's view".

The advisory councils have produced a number of overall plans for educational reform. These plans have greatly enriched the public debate on education, but they have had little impact on the classroom. We feel that overall plans were a characteristic feature of the optimistic sixties but are of little relevance for the constraints which dominate the seventies.

We have, therefore, been very interested in the experimentation programme sponsored by the Educational Planning Committee on which national and regional authorities are represented. We have dealt with this programme in some detail in another chapter of our report and have emphasised the importance which these pilot projects will have for the further development of the education system in Zephyria. The programme comprises at present some 150 experiments which range from pre-school to adult education, and which are financed jointly by the national and regional authorities. In principle, each of these experimental projects should have had a research component, from the design right through to the evaluation stage, but in practice this principle seemed to us not to have been fully implemented. We therefore recommend:

- each pilot project should be given a team of researchers who will be responsible for observing and finally evaluating the project and who should be wholly independent of the group executing the project;

- the research teams should be assigned to the pilot projects on the basis of a contract concluded with a qualified research organisation in the region concerned;

- annual reports should be published and widely circulated on each pilot project, and on termination of the grant for the project a final evaluation should be undertaken and published;

- the national authority concerned should establish within its Secretariat an International Liaison Section which should summarise reports of general interest on the pilot projects in either English or French and distribute them abroad through international organisations like OECD or the Council of Europe; the Section should also be responsible for establishing contacts between the research teams for the pilot projects and similar research organisations abroad and for collecting and disseminating in Zephyria the results of relevant experiments abroad.

We are convinced that this shift of emphasis from overall theoretical planning to experimentation with pilot projects is a step in the right direction, although we realise that this will raise new problems. Foremost among these problems is of course the manpower problem. If only 50 of the current 150 experiments are classed in the pilot project category and on average staffed with three qualified researchers, this would amount to some 150 researchers. However, a country of the size of Zephyria should not find it impossible to solve this problem.

The observation and evaluation of the pilot projects will certainly raise a number of general problems, which must be investigated separately and the results fed back into the projects. This obviously calls for commissioned research. We therefore recommend that a national body be created which could be attached either to the "goal-seeking body" described above (cf. 3 a) or to the Educational Planning Committee or be an independent institution. It should have the task of identifying, on the basis of the research reports on the pilot projects, the general problems which they raise. Contracts for such research should be offered for public competition and the best qualified organisation or single researcher applying for such a contract should obtain it. On this national body for commissioning research, the administrations at the national, regional and local levels

should be represented, as well as researchers in the relevant disciplines and headmasters and teachers involved in the pilot projects. The body should be financed accordingly and should be able to draw on a 3-5 year budget.

Finally, we would like to state our opinion that this remodelled organisation of research, to parallel the planning process and to make the experimentation phase effective, would enhance the reform movement without encroaching upon the federal structure of the country or the authority of the regions. A greater impact of research on educational development might furthermore have the effect of creating a better informed public opinion and winning public support for a general consensus on the main issues of improvement in education.